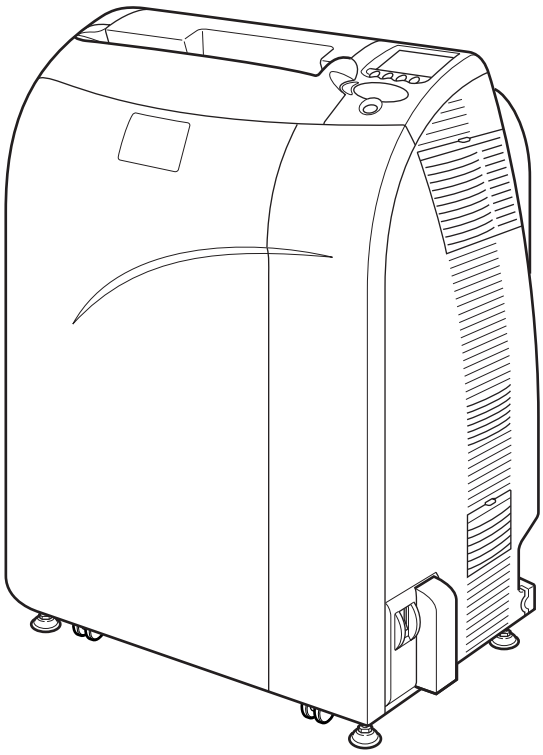
FUJIFILM

# FCR CARBON X (CR-IR 357)

# FCR CARBON XL (CR-IR 356)

## Operation Manual

**First Edition: November 2005**




1 For Safe Operation

2 Product Overview

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4 Utility

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**Fuji Photo Film Co., Ltd.**


This Operation Manual describes details on how to operate the FCR CARBON X/XL (CR-IR 357/CR-IR 356) and cautions to be observed when operating it.
Please read the Operation Manual thoroughly before actually operating the FCR CARBON X/XL (CR-IR 357/CR-IR 356) system. After reading this manual, store it nearby the FCR CARBON X/XL (CR-IR 357/CR-IR 356) so that you can see it whenever necessary.


11.2005 897N0564

# Introduction

The indications for use of the FCR CARBON X/XL (CR-IR 357/CR-IR 356) Image Reader with Imaging Plate (IP) reading is the identification, capture, digitization, and processing of diagnostic X-ray images of human anatomy, and associating patient and exam identification with the images.

This Operation Manual is applicable to the following software.
- FCR CARBON X main unit software V1.0 or later
- FCR CARBON XL main unit software V1.0 or later

The FCR CARBON X/XL (CR-IR 357/CR-IR 356) is equipment designed to scan an X-ray image formed on an imaging plate (IP), being an image reading unit used for the CR-IR 357/CR-IR 356 Fuji Computed Radiography system.
An IP is used as an X-ray image detector. It records the image information of an image captured by an X-ray exposure.

The FCR CARBON X/XL (CR-IR 357/CR-IR 356) Operation Manual (hereafter referred to as this manual) provides information necessary for the use of the FCR CARBON X/XL (CR-IR 357/CR-IR 356), including an overview of the FCR CARBON X/XL (CR-IR 357/CR-IR 356), operation instructions and operation precautions, daily checks and maintenance, and so on.

## CAUTIONS

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**Caution: Rx Only (Federal law restricts this device to sale by or on the order of a physician.)**

**Trademark**
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# Contents at a Glance


Chapter 1 **For Safe Operation** 1
This chapter presents Warnings and Cautions you should observe for safe operation of the FCR CARBON X/XL (CR-IR 357/CR-IR 356).

Chapter 2 **Product Overview** 2
This chapter presents major features, unit names and functions of the FCR CARBON X/XL (CR-IR 357/CR-IR 356).

Chapter 3 **Basic Operation** 3
This chapter provides instructions on how to start up/shut down the FCR CARBON X/XL (CR-IR 357/CR-IR 356) and how to read an image.

Chapter 4 **Utility** 4
This chapter explains how to set up your environment to use the FCR CARBON X/XL (CR-IR 357/CR-IR 356), including panel-brightness and power-save settings.

Chapter 5 **Troubleshooting** 5
This chapter describes how to troubleshoot in the event of an error on the FCR CARBON X/XL (CR-IR 357/CR-IR 356), and provides explanations about a list of error messages each of which appears when an error occurs.

Chapter 6 **Care and Maintenance** 6
This chapter describes daily checks and maintenance you are advised to perform so that you can use the FCR CARBON X/XL (CR-IR 357/CR-IR 356) in optimum working conditions.

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- Appendix A Specifications
- Appendix B IP Handling
- Appendix C About Text Information Printed on Film
- Appendix Y Image Processing Parameters
- Appendix Z Precautions for Exposure

**Maintenance and Inspection**

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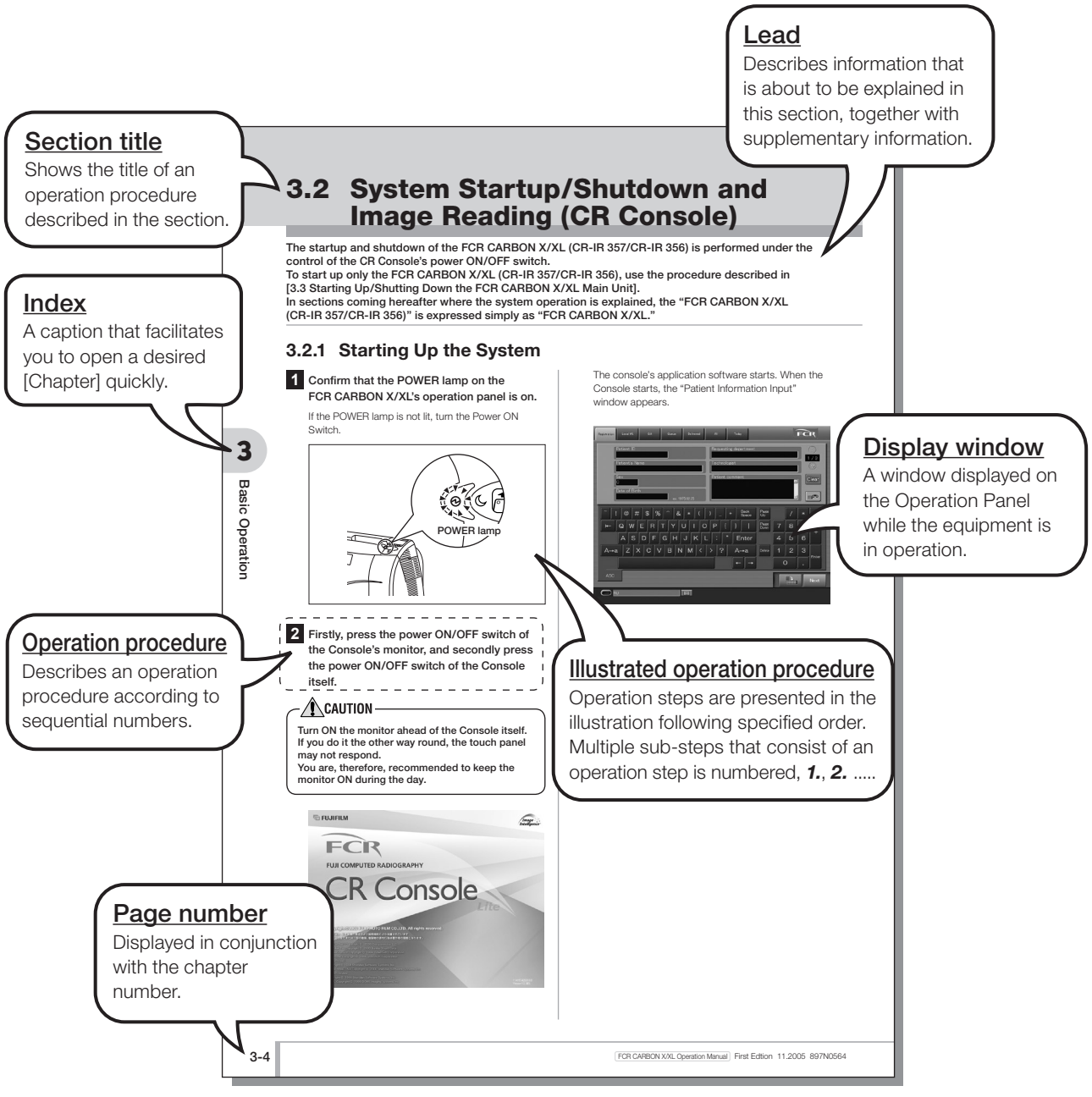
# How to Read This Manual

## Basic page configuration

Please have a good grasp of the basic page configuration of this manual, as illustrated below, for you to use it more efficiently.

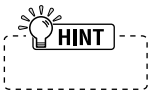

Lead
Describes information that is about to be explained in this section, together with supplementary information.
Section title
Shows the title of an operation procedure described in the section.
3.2 System Startup/Shutdown and Image Reading (CR Console)
The startup and shutdown of the FCR CARBON X/XL (CR-IR 357/CR-IR 356) is performed under the control of the CR Console's power ON/OFF switch.
To start up only the FCR CARBON X/XL (CR-IR 357/CR-IR 356), use the procedure described in [3.3 Starting Up/Shutting Down the FCR CARBON X/XL Main Unit].
In sections coming hereafter where the system operation is explained, the "FCR CARBON X/XL (CR-IR 357/CR-IR 356)" is expressed simply as "FCR CARBON X/XL."
Index
A caption that facilitates you to open a desired [Chapter] quickly.
3.2.1 Starting Up the System
1 Confirm that the POWER lamp on the FCR CARBON X/XL's operation panel is on.
If the POWER lamp is not lit, turn the Power ON Switch.
POWER lamp
The console's application software starts. When the Console starts, the "Patient Information Input" window appears.
Display window
A window displayed on the Operation Panel while the equipment is in operation.
3
Basic Operation
Operation procedure
Describes an operation procedure according to sequential numbers.
2 Firstly, press the power ON/OFF switch of the Console's monitor, and secondly press the power ON/OFF switch of the Console itself.
CAUTION
Turn ON the monitor ahead of the Console itself. If you do it the other way round, the touch panel may not respond.
You are, therefore, recommended to keep the monitor ON during the day.
Illustrated operation procedure
Operation steps are presented in the illustration following specified order. Multiple sub-steps that consist of an operation step is numbered, 1., 2. .....
FUJIFILM
FCR
FUJI COMPUTED RADIOGRAPHY
CR Console
Page number
Displayed in conjunction with the chapter number.
3-4
FCR CARBON X/XL Operation Manual First Edtion 11.2005 897N0564

## Marks

Information items to be observed when you are operating this system and the supplementary remarks are described in this manual with the respective marks.
For the safe system operation, be sure to observe **Warning**/Caution.

**Indicates hazardous situations that may lead to serious injury or even death if the precaution is not or could not be followed.**

**Indicates hazardous situations that may lead to mild or moderate injury or physical damages if the caution is not or cannot be followed.**



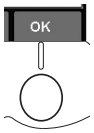

Shows an item helpful for further effective system operation.

Shows a more detailed operation method or an item that describes additional information.

## Expressions

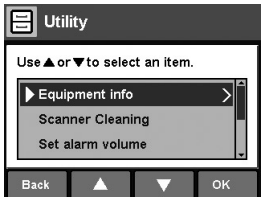
Names of menu keys, windows, and messages are as follows.

● **Buttons for selection menus (example)**




[**OK**]
Shows the manipulation to press the button for a selection menu displayed on the window.

● **Windows (example)**

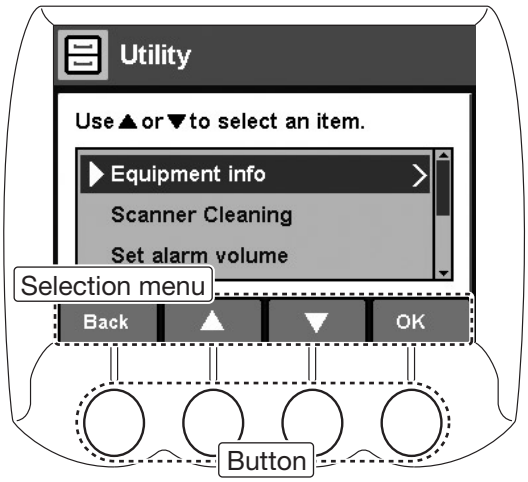



"Utility Top" window

● **Messages (example)**

**Take out the cassette.** -------<Take out the cassette.>

## Windows




Use the buttons located below the selection-menu display area for manipulation purposes.

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# For Safe Operation

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# 1.1 Precautions Before Operating This Equipment

**Before using this equipment, please read "Precautions Before Operating This Equipment" carefully so that you can operate it correctly.**
**Whenever you operate this equipment, be sure to observe those precautions. Failure to do so may cause you to subject to injuries or property damage to occur.**



This system is classified as a medical device under EC Directive 93/42/EEC. This equipment has been designed on the assumption that the patient would not come into direct contact with it or for operation by appropriately trained operator.

Process waste correctly, as stipulated by local law or any regulations that apply.

# 1.2 Precautions to be Observed When Using the Electric Medical Equipment



We ask that you heed these usage precautions and use the equipment correctly.

**1.** This equipment should be used only by people who have the proper skills.

**2.** Heed the following precautions when installing the equipment.
- **2-1.** Install the equipment where water will not splash it.
- **2-2.** Install the equipment where it will not be adversely affected by air pressure, temperature, humidity, ventilation, sunlight, dust or the presence of salt, sulfur or like substances in the atmosphere.
- **2-3.** Make sure the equipment will remain in stable condition on a level surface and not be subjected to vibration or shock.
- **2-4.** Do not install the equipment in places where chemicals are stored or gases emitted.
- **2-5.** Make sure that the power frequency, voltage and power consumption are appropriate.
- **2-6.** Connect the ground wire correctly.

**3.** Observe the following precautions before beginning to use the device.
- **3-1.** Inspect the switch contacts, polarities, dial settings and meters and confirm that the equipment is functioning properly.
- **3-2.** Confirm that the ground wire has been completely connected.
- **3-3.** Make sure that all cords have been connected properly and safely.
- **3-4.** Be aware that correct diagnosis can be hindered and danger can result from using different pieces of equipment together.

**4.** Heed the following precautions after using the equipment.
- **4-1.** Using the established procedure, restore the operation switches, dials, etc., to what they were prior to use and then turn the power off.
- **4-2.** When unplugging cords, do not pull on the body of the cord itself or apply unnecessary force.
- **4-3.** After using the accessories, recollect them and put them back in order.

**5.** If there is trouble with the equipment, do not attempt to fix it randomly. Instead, do what is indicated and entrust repairs to a professional.

**6.** Do not remodel the equipment.

**7.** Maintenance and Inspection
- **7-1.** Make inspect the equipment and parts periodically.
- **7-2.** If the equipment has not been used for a long time, make sure that it operates normally and safely prior to using it again.

**8.** Other Items
- **8-1.** When subjecting patients (particularly infants and pregnant women) to radiation, make sure not to exceed the necessary time and dose. Also, ensure that radiation is contained within the region for exposure.
- **8-2.** Follow the Operation Manual and operate the equipment correctly.

# 1.3 Safety

**Prior to using this equipment, please carefully read safety precautions presented herein for you to operate it correctly.**



## Laser Handling Precautions

This equipment is a Class 1 laser product (IEC60825-1: 2001/EN60825-1: 2002).

FCR CARBON X/XL (CR-IR 357/356) Laser Unit Specifications

| | | |
|---|---|---|
| Class | : | 3B |
| Medium | : | Semiconductor laser |
| Wavelength | : | 660 nm |
| Maximum Output | : | 50 mW (CW) |

**⚠WARNING**

**The FCR CARBON X/XL (CR-IR 357/356) incorporates a Class 3B laser with maximum output of 50mW.**
**To prevent exposure to its laser beams, observe the following precautions.**
- **Never open or remove the protective covers.**
- **Always contact a qualified service engineer immediately if you suspect there is a malfunction.**

**⚠CAUTION**

**Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.**

## Classification

1) According to the type of protection against electrical shock
   CLASS 1 EQUIPMENT
2) According to the degree of protection against electric shock
   NO APPLIED PART
3) Protection against harmful ingress of water
   IPXO
4) According to the degree of safety of application in the presence of a flammable anesthetics mixture with air or with oxygen or nitrous oxide.
   Equipment not suitable for use in the presence of a flammable anesthetics mixture with air or with oxygen or nitrous oxide.
5) According to the mode of operation
   CONTINUOUS OPERATION

## General Precautions Against Electrical Shock

**⚠WARNING**

**The service voltage of this equipment is AC100V to 240V.**
**Instructions below must be followed to prevent an electrical shock to users.**

- **Never open equipment covers. Do not touch high-voltage units of the equipment with your hand, otherwise you may receive an electrical shock.**
- **Install the equipment where no water may subject the equipment.**
- **Ensure that the equipment is properly grounded.**
- **Check that all the cables are properly and perfectly connected.**
- **When using the equipment within the environment where the patient may get into touch with it, optionally connect additional protective earth conductor (FCR CARBON X/XL (CR-IR 357/CR-IR 356)).**
- **When using the equipment within the environment where the patient may get into touch with it, connect the power supply unit to a medical-use plug via an optional insulating power transformer (CR Console (CR-IR 348CL)).**

# 1.4 Electromagnetic Compatibility (EMC)



This equipment has been tested and found to comply with the limits for medical devices to the EN60601-1-2:2001, Medical Device Directive 93/42/EEC.
These limits are designed to provide reasonable protection against harmful interference in a typical medical installation.
This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to other devices in the vicinity.
However, there is no guarantee that interference will not occur in a particular installation.
If this equipment does cause harmful interference to other devices, which can be determined by tuning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving device.
- Increase the separation between the equipment.
- Connect the equipment into an outlet on a circuit different from that to which the other device(s) are connected.
  Consult the manufacturer or field service technician for help.

## Further information for IEC60601-1-2:2001

- Medical electrical equipment needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided in the accompanying documents.
- Portable and mobile RF communications equipment can affect medical electrical equipment.
- The use of accessories, transducers and cables other than those specified, with the exception of transducers and cables sold by FUJI PHOTO FILM CO., LTD. as replacement parts for internal components, may result in increased emissions or decreased immunity of the FCR CARBON X/XL (CR-IR 357/CR-IR 356).

**List of Cables**

| Name | Fuji Photo Film Parts code | General Specification |
|---|---|---|
| **I/F Cable** | – | TIA/EIA-568 Cat5 or more.<br>Straight cable of UTP type. |

- The FCR CARBON X/XL (CR-IR 357/CR-IR 356) should not be used adjacent to or stacked with other equipment.
  If adjacent or stacked use is necessary, the FCR CARBON X/XL (CR-IR 357/CR-IR 356) should be observed to verify normal operation in the configuration in which it will be used.

| Guidance and manufacturer's declaration - electromagnetic emissions | | |
|---|---|---|
| The CR-IR 357/CR-IR 356 is intended for use in the electromagnetic environment specified below.<br>The customer or the user of the CR-IR 357/CR-IR 356 should assure that it is used in such an environment. | | |
| **Emissions test** | **Compliance** | **Electromagnetic environment - guidance** |
| RF emissions<br>CISPR 11 | Group 1 | The CR-IR 357/CR-IR 356 uses RF energy only for its internal function.<br>Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment. |
| RF emissions<br>CISPR 11 | Class A | The CR-IR 357/CR-IR 356 is suitable for use in all establishments other than domestic and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes. |
| Harmonic emissions<br>IEC61000-3-2 | Class A | |
| Voltage fluctuations/<br>flicker emissions<br>IEC61000-3-3 | Complies | |

| Guidance and manufacturer's declaration - electromagnetic immunity | | | |
|---|---|---|---|
| The CR-IR 357/CR-IR 356 is intended for use in the electromagnetic environment specified below.<br>The customer or the user of the CR-IR 357/CR-IR 356 should assure that it is used in such an environment. | | | |
| **Immunity test** | **IEC 60601 test level** | **Compliance level** | **Electromagnetic environment - guidance** |
| Electrostatic discharge (ESD)<br>IEC61000-4-2 | ±6kV contact<br>±8kV air | ±2kV contact<br>±4kV contact<br>±6kV contact<br>±2kV air<br>±4kV air<br>±8kV air | Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%. |
| Electrical fast transient/ burst<br>IEC61000-4-4 | ±2kV for power supply lines<br>±1kV for input/output lines | ±2kV for power supply lines<br>±1kV for input/output lines | Mains power quality should be that of a typical commercial or hospital environment. |
| Surge<br>IEC61000-4-5 | ±1kV differential mode<br>±2kV common mode | ±1kV differential mode<br>±2kV common mode | Mains power quality should be that of a typical commercial or hospital environment. |
| Voltage dips, short interruptions and voltage variations of power supply input lines<br>IEC61000-4-11 | <5% $U_T$<br>(>95% dip in $U_T$)<br>for 0.5 cycle<br>40% $U_T$<br>(60% dip in $U_T$)<br>for 5 cycles<br>70% $U_T$<br>(30% dip in $U_T$)<br>for 25 cycles<br><5% $U_T$<br>(>95% dip in $U_T$)<br>for 5 s | <5% $U_T$<br>(>95% dip in $U_T$)<br>for 0.5 cycle<br>40% $U_T$<br>(60% dip in $U_T$)<br>for 5 cycles<br>70% $U_T$<br>(30% dip in $U_T$)<br>for 25 cycles<br><5% $U_T$<br>(>95% dip in $U_T$)<br>for 5 s | Mains power quality should be that of a typical commercial or hospital environment. If the user of the CR-IR 357/CR-IR 356 requires continued operation during power mains interruptions, it is recommended that the CR-IR 357/ CR-IR 356 be powered from an uninterruptible power supply or a battery. |
| Power frequency (50/60Hz) magnetic field<br>IEC61000-4-8 | 3 A/m | 3 A/m | Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment. |
| NOTE: $U_T$ is the a.c. mains voltage prior to application of the test level. | | | |

| Guidance and manufacturer's declaration - electromagnetic immunity | | | |
|---|---|---|---|
| The CR-IR 357/CR-IR 356 is intended for use in the electromagnetic environment specified below.<br>The customer or the user of the CR-IR 357/CR-IR 356 should assure that it is used in such an environment. | | | |
| **Immunity test** | **IEC 60601 test level** | **Compliance level** | **Electromagnetic environment - guidance** |
| Conducted RF<br>IEC61000-4-6 | 3 Vrms<br>150 kHz to 80 MHz | 3 Vrms | Portable and mobile RF communications equipment should be used no closer to any part of the CR-IR 357/ CR-IR 356, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.<br>**Recommended separation distance**<br>$d = 1.2\sqrt{P}$ |
| Radiated RF<br>IEC61000-4-3 | 3 V/m<br>80 MHz to 2.5 GHz | 3 V/m | $d = 1.2\sqrt{P}$ 80 MHz to 800 MHz<br>$d = 2.3\sqrt{P}$ 800 MHz to 2.5 GHz<br>where $P$ is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and $d$ is the recommended separation distance in metres (m).<br>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,[a] should be less than the compliance level in each frequency range.[b]<br>Interference may occur in the vicinity of equipment marked with the following symbol:<br> |
| NOTE 1: At 80 MHz and 800 MHz, the higher frequency range applies.<br>NOTE 2: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people. | | | |
| a Field strength from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the CR-IR 357/CR-IR 356 is used exceeds the applicable RF compliance, the CR-IR 357/CR-IR 356 should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the CR-IR 357/ CR-IR 356.<br>b Over the frequency range 150 kHz to 80 MHz, field strength should be less than 3 V/m. | | | |

**Recommended separation distances between Portable and mobile RF communications equipment and the CR-IR 357/CR-IR 356**

The CR-IR 357/CR-IR 356 is intended for use in the electromagnetic environment in which radiated RF disturbances are controlled.
The customer or the user of the CR-IR 357/CR-IR 356 can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the CR-IR 357/ CR-IR 356 as recommended below, according to the maximum output power of the communications equipment.

| **Rated maximum output power of transmitter** W | **Separation distance according to frequency of transmitter** m | | |
|---|---|---|---|
| | **150 kHz to 80 MHz** $d = 1.2\sqrt{P}$ | **80 MHz to 800 MHz** $d = 1.2\sqrt{P}$ | **800 MHz to 2.5 GHz** $d = 2.3\sqrt{P}$ |
| 0.01 | 0.12 | 0.12 | 0.23 |
| 0.1 | 0.38 | 0.38 | 0.73 |
| 1 | 1.2 | 1.2 | 2.3 |
| 10 | 3.8 | 3.8 | 7.3 |
| 100 | 12 | 12 | 23 |

For transmitters rated at a maximum output power not listed above, the recommended separation distance *d* in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where *P* is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1: At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2: These guidelines may not apply in all situations.
Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

# 1.5 Precautions to Take When Using the FCR CARBON X/XL (CR-IR 357/CR-IR 356)



1. Do not apply excessive force to a cassette when it is being inserted and also while it sits inside to keep the FCR CARBON X/XL (CR-IR 357/CR-IR 356) from toppling over and to prevent possible injury to you.
2. When a long-view cassette is used, be sure to install toppling-prevention measures.
   If excessive force is applied to such a cassette being inserted in the FCR CARBON X/XL (CR-IR 357/CR-IR 356), the FCR CARBON X/XL (CR-IR 357/CR-IR 356) may topple over and cause injury.
3. Do not sit on the FCR CARBON X/XL (CR-IR 357/CR-IR 356) or apply your weight to it by leaning forward and placing your hands on the FCR CARBON X/XL (CR-IR 357/CR-IR 356) to keep the FCR CARBON X/XL (CR-IR 357/CR-IR 356) from toppling over and to prevent possible injury.
4. Do not sit on the FCR CARBON X/XL (CR-IR 357/CR-IR 356) or apply your weight to it by leaning forward and placing your hands on the FCR CARBON X/XL (CR-IR 357/CR-IR 356) to keep the FCR CARBON X/XL's (CR-IR 357/CR-IR 356) cassette set unit from breaking and to prevent possible injury from fragments or the like.
5. Do not put your finger into the FCR CARBON X/XL's (CR-IR 357/CR-IR 356) cassette set unit since your finger may touch sharp edges inside and cut yourself.
6. When you insert a cassette into the FCR CARBON X/XL (CR-IR 357/CR-IR 356), be careful not to get your fingers caught between the cassette and the cover.
7. When using the FCR CRBON X/XL (CR-IR 357/CR-IR 356) with a keyboard placed on it, make certain that the keyboard base is tucked away securely and then insert a cassette into the FCR CARBON X/XL (CR-IR 357/CR-IR 356).
   Otherwise, you may be injured if your hand hits the keyboard.
8. Since system sensitivity (S value) varies over time and by other factors including system trouble, never use it for radiation-dose and/or AEC (phototimer) setting purposes.
9. If you use the S value as a measure of exposure dose for image-quality and exposed-dose control purposes or when you use FNC (Flexible Noise Control) processing, periodically determine whether the S value has changed noticeably in the meantime.
10. After checking information attached to radiographic images for correctness, use such information for image interpretation work.
11. Before inserting a cassette into the FCR CARBON X/XL (CR-IR 357/CR-IR 356), verify patient identification without fail by means of the patient's full name, birthdate and the like.
12. Before inserting a cassette into the FCR CARBON X/XL (CR-IR 357/CR-IR 356), be sure to read the exposure menu.
13. Before inserting a cassette into the FCR CARBON X/XL (CR-IR 357/CR-IR 356), make sure that the FCR CARBON X/XL (CR-IR 357/CR-IR 356) is in image-reading mode. This is because cassette erasure will take place if the FCR CARBON X/XL (CR-IR 357/CR-IR 356) is in erase mode.
14. Do not subject the equipment or cassette to vibration while an image is being read. Otherwise, an image with unevenness or the like may be output, which will adversely affect image reading.

**15.** When you install the FCR CARBON X/XL (CR-IR 357/CR-IR 356) close to a wall, use caution not to block its air outlet openings.
If the temperature inside the FCR CARBON X/XL (CR-IR 357/CR-IR 356) rises abnormally high, the image on the IP may be imperfectly erased, possibly causing an output image that does not allow accurate image interpretation.

**16.** Clean the air outlet openings periodically to keep them clear of dust or the like which can cause blocking. If they are blocked, the temperature inside the FCR CARBON X/XL (CR-IR 357/CR-IR 356) rises abnormally high and the image on the IP may be imperfectly erased, possibly causing an output image that does not allow accurate image interpretation.

**17.** An inserted cassette should not be taken out until the cassette ejection lamp blinks (blue) and the message “Take out the cassette” is displayed.
If you try to pull out such an in-process cassette, it becomes the unremovable.

**18.** Do not insert an unspecified cassette into the Image Reader. If an unspecified cassette is inserted into the Image Reader, image reading is disabled. Be sure to use a specified cassette.

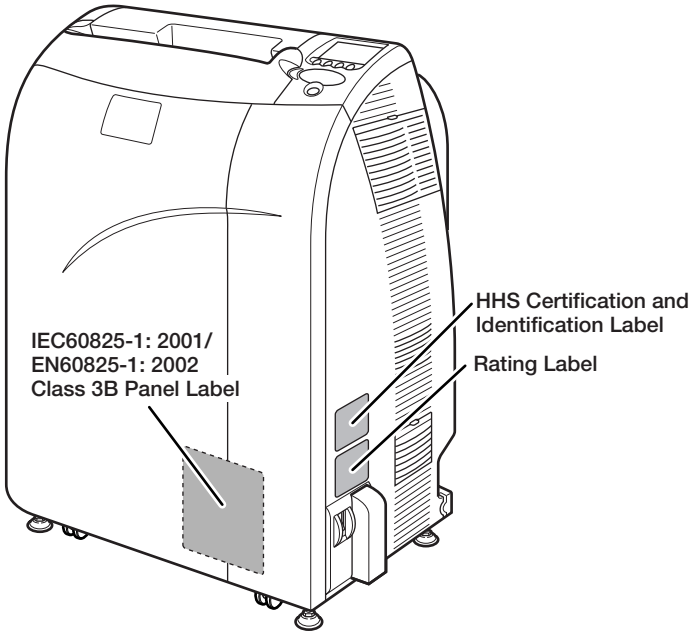
**19.** Do not place an unspecified IP into the cassette, otherwise an image that may affect image reading can be output.

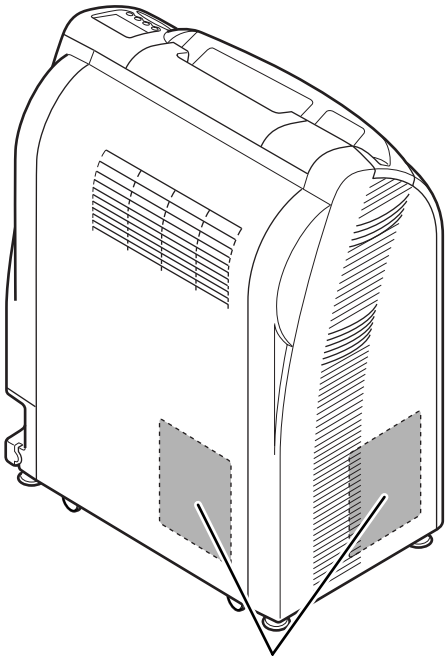
**20.** Replace the erasure lamp when the message prompting for replacement is displayed.
For the replacement of the lamp, please contact your local authorized distributor. When the lamp fails, image erasure becomes impossible.

# 1.6 Location of Each Label

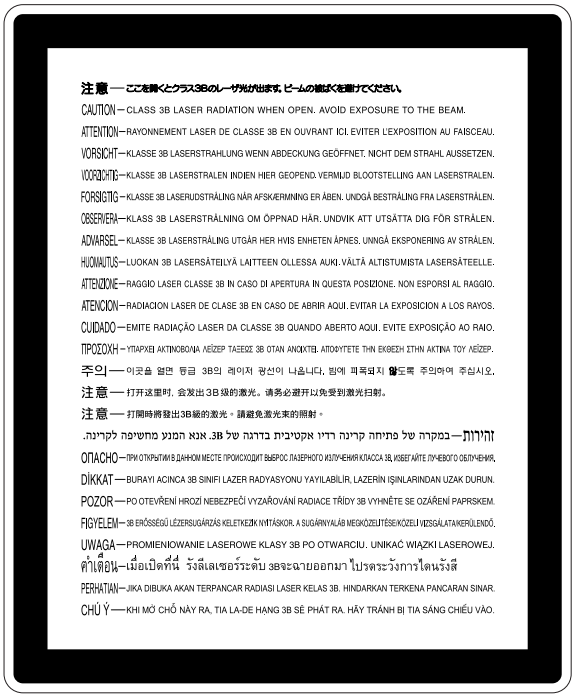
Shown below are the positions where the FCR CARBON X/XL (CR-IR 357/CR-IR 356) labels are affixed.

## FCR CARBON X (CR-IR 357)



IEC60825-1: 2001/EN60825-1: 2002
Class 3B Panel Label


注意 — ここを開くとクラス3Bのレーザが出ます。ビームの被ばくを避けてください。
CAUTION — CLASS 3B LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO THE BEAM.
ATTENTION — RAYONNEMENT LASER DE CLASSE 3B EN OUVRANT ICI. EVITER L'EXPOSITION AU FAISCEAU.
VORSICHT — KLASSE 3B LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET. NICHT DEM STRAHL AUSSETZEN.
VOORZICHTIG — KLASSE 3B LASERSTRALEN INDIEN HIER GEOPEND. VERMIJD BLOOTSTELLING AAN LASERSTRALEN.
FORSIGTIG — KLASSE 3B LASERUDSTRÅLING NÅR AFSKÆRMNING ER ÅBEN. UNDGÅ BESTRÅLING FRA LASERSTRÅLEN.
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ADVARSEL — KLASSE 3B LASERSTRÅLING UTGÅR HER HVIS ENHETEN ÅPNES. UNNGÅ EKSPONERING AV STRÅLEN.
HUOMAUTUS — LUOKAN 3B LASERSÄTEILYÄ LAITTEEN OLLESSA AUKI. VÄLTÄ ALTISTUMISTA LASERSÄTEELLE.
ATTENZIONE — RAGGIO LASER CLASSE 3B IN CASO DI APERTURA IN QUESTA POSIZIONE. NON ESPORSI AL RAGGIO.
ATENCION — RADIACION LASER DE CLASE 3B EN CASO DE ABRIR AQUI. EVITAR LA EXPOSICION A LOS RAYOS.
CUIDADO — EMITE RADIAÇÃO LASER DA CLASSE 3B QUANDO ABERTO AQUI. EVITE EXPOSIÇÃO AO RAIO.
ΠΡΟΣΟΧΗ — ΥΠΑΡΧΕΙ ΑΚΤΙΝΟΒΟΛΙΑ ΛΕΪΖΕΡ ΤΑΞΕΩΣ 3Β ΟΤΑΝ ΑΝΟΙΚΤΕΙ. ΑΠΟΦΥΓΕΤΕ ΤΗΝ ΕΚΘΕΣΗ ΣΤΗΝ ΑΚΤΙΝΑ ΤΟΥ ΛΕΪΖΕΡ.
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זהירות — במקרה של פתיחה קרינה רדיו אקטיבית בדרגה של 3B. אנא המנע מחשיפה לקרינה.
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DİKKAT — BURAYI ACINCA 3B SINIFI LAZER RADYASYONU YAYILABİLİR. LAZERİN IŞINLARINDAN UZAK DURUN.
POZOR — PO OTEVŘENÍ HROZÍ NEBEZPEČÍ VYZAŘOVÁNÍ RADIACE TŘÍDY 3B VYHNĚTE SE OZÁŘENÍ PAPRSKEM.
FIGYELEM — 3B ERŐSSÉGŰ LÉZERSUGÁRZÁS KELETKEZIK NYITÁSKOR. A SUGÁRNYALÁB MEGKÖZELÍTÉSE/KOZELVIZSGÁLATA/KERÜLENDŐ.
UWAGA — PROMIENIOWANIE LASEROWE KLASY 3B PO OTWARCIU. UNIKAĆ WIĄZKI LASEROWEJ.
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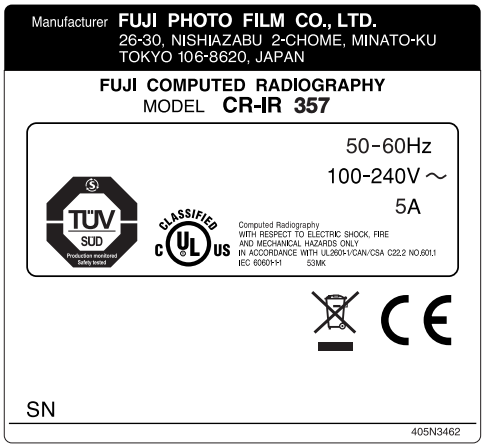
CHÚ Ý — KHI MỞ CHỖ NÀY RA, TIA LA-DE HẠNG 3B SẼ PHÁT RA. HÃY TRÁNH BỊ TIA SÁNG CHIẾU VÀO.

IEC60825-1: 2001/EN60825-1: 2002
Class 3B Panel Label
(This label is affixed to the inside of the cover and is invisible from the outside.)

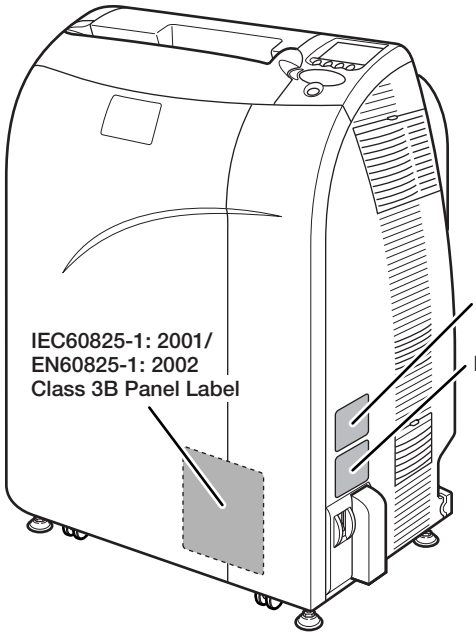
FUJI PHOTO FILM CO., LTD.
26-30, NISHIAZABU 2-CHOME, MINATO-KU,
TOKYO 106-8620, JAPAN
MODEL CR-IR 357
SERIAL No.
MANUFACTURED
FFTPH
Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No.50, dated (July 26, 2001).

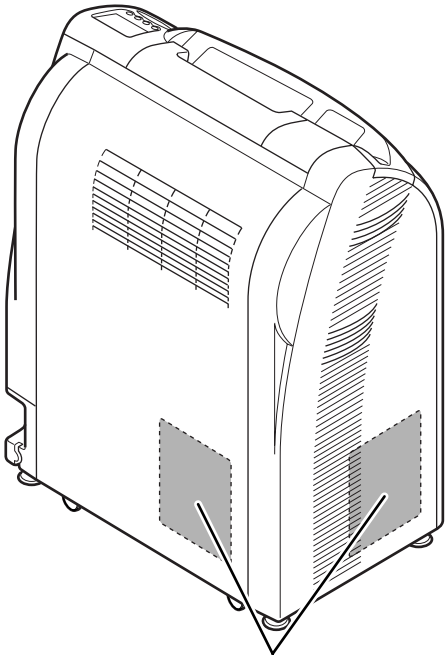
HHS Certification and Identification Label



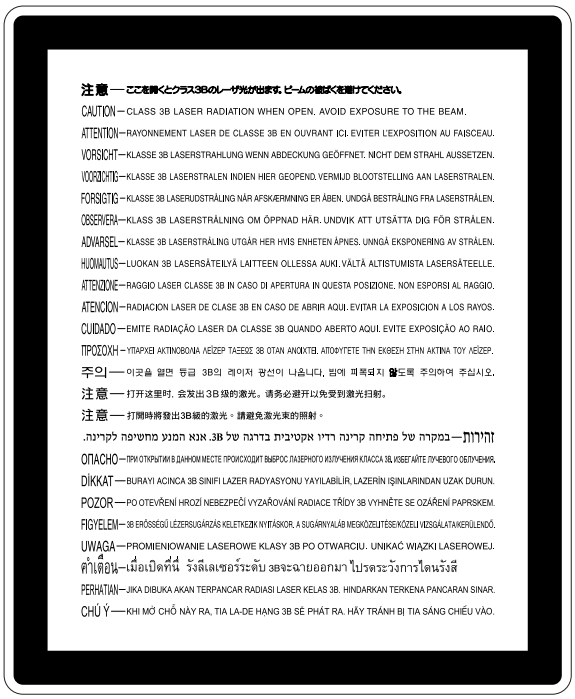

Rating Label

## FCR CARBON XL (CR-IR 356)



IEC60825-1: 2001/EN60825-1: 2002
Class 3B Panel Label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FORSIGTIG — KLASSE 3B LASERUDSTRÅLING NÅR AFSKÆRMNING ER ÅBEN. UNDGÅ BESTRÅLING FRA LASERSTRÅLEN.
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Class 3B Panel Label
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26-30, NISHIAZABU 2-CHOME, MINATO-KU,
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MODEL CR-IR 356
SERIAL No.
MANUFACTURED
FFTPH
Complies with FDA performance standards for laser products except for deviations pursuant to Laser Notice No.50, dated (July 26, 2001).

HHS Certification and Identification Label

Rating Label

# Chapter 2

# Product Overview



Pages

2.1 Features of the FCR CARBON X/XL (CR-IR 357/CR-IR 356) 2-2

2.2 Units Names and the Functions 2-4

2.2.1 FCR CARBON X/XL (CR-IR 357/CR-IR 356) Main Unit 2-4

2.2.2 Operation Panel 2-5

2.2.3 Display 2-6

2.2.4 Processing Status Bar 2-8

# 2.1 Features of the FCR CARBON X/XL (CR-IR 357/CR-IR 356)

**The FCR CARBON X/XL (CR-IR 357/CR-IR 356) is equipment designed to read X-ray image information recorded on an imaging plate (IP). The IP is used as an X-ray image detector. It records the image information of an image captured by an X-ray exposure.**
**This section explains features of a system employing the FCR CARBON X/XL (CR-IR 357/CR-IR 356) and FCR CARBON X/XL (CR-IR 357/CR-IR 356)-equipped system configuration examples.**



The system can be used for chest, abdomen, bone, spine, head and other plain X-ray imaging, as well as spinal canal, bronchial tube, urinary organ, and other contrast medium X-ray imaging and X-ray tomography.

Major features of the system include:

**1** By virtue of the effects of digital image processing, the system produces radiographs that have a high diagnostic value and are easy to interpret.

**2** The system has a wide latitude for incident X-rays so that a large amount of X-ray diagnostic information can be obtained.

**3** The system features high sensitivity, making it possible to reduce X-ray radiation doses or exposure to patients.

**4** As the system takes an advantage of a wide latitude and an automatic sensitivity adjustment function, the image reading results of radiographs remain virtually unaffected by small variations in X-ray exposure conditions. Therefore, high image-density consistency can be obtained among radiographs.

**5** Exposure information items that include patient information, anatomical regions and exposure menus can be entered on the console connected to the FCR CARBON X/XL (CR-IR 357/ CR-IR 356).

**6** Since the FCR CARBON X/XL (CR-IR 357/CR-IR 356) is designed to have a small depth, it can be installed in relatively tight spaces.

## ■ Connectable console

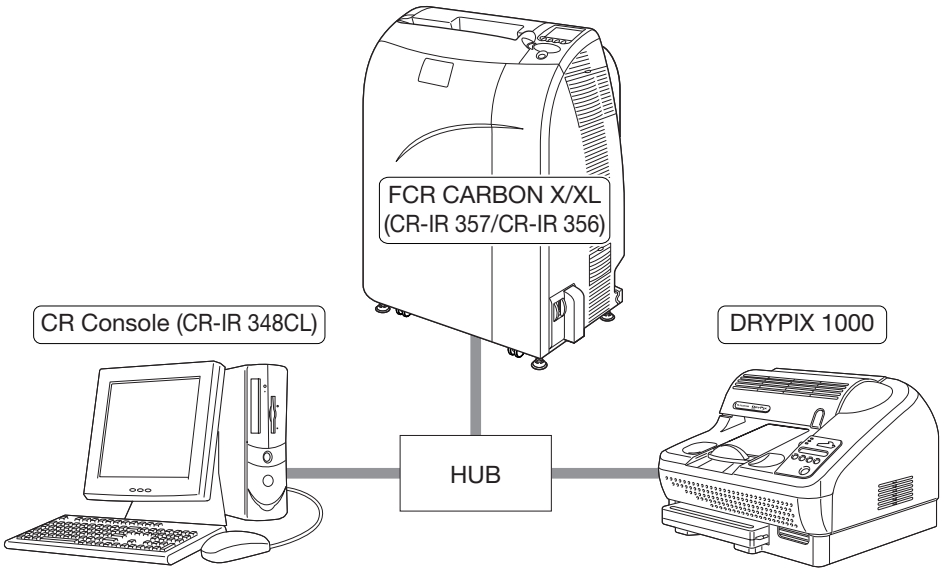
The console shown below can be connected.

- CR Console (CR-IR 348CL)

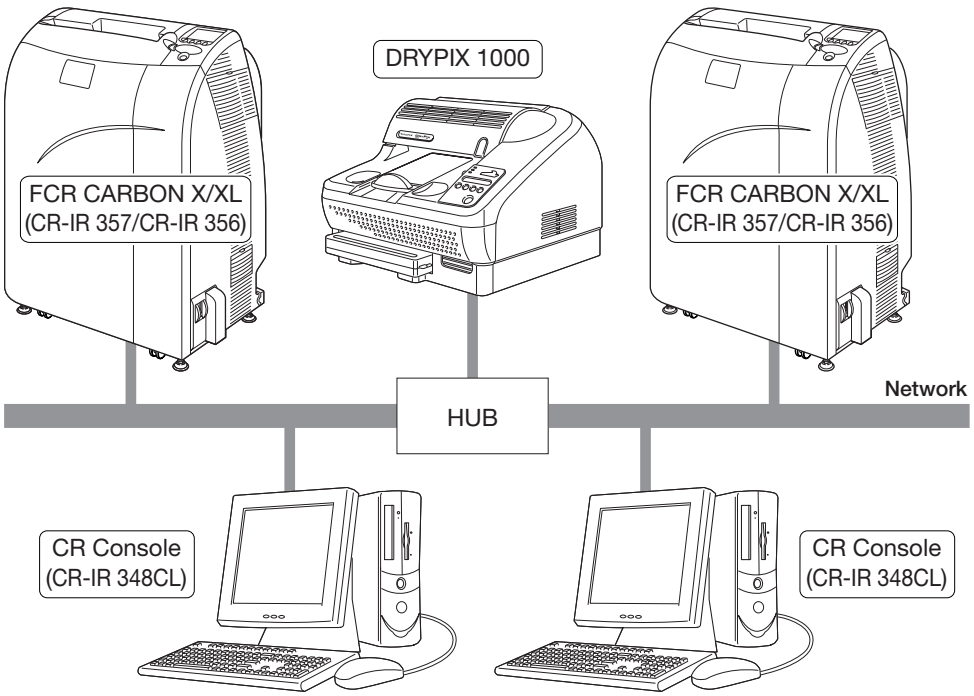
Network-connected to a Console or printer or the like, the FCR CARBON X/XL (CR-IR 357/CR-IR 356) also provides support to diversified system configurations.
Illustrated below are examples of system configurations, one is for 1-to-1 connected FCR CARBON X/XL (CR-IR 357/CR-IR 356) and Console and the other is for N-to-M connected FCR CARBON X/XL (CR-IR 357/CR-IR 356) and Console.
Accessory equipment connected to the analog and digital interfaces must be in compliance with the respective nationally harmonized IEC standards (i.e. IEC 60950 for data processing equipment, IEC 60065 for video equipment, IEC 61010-1 for laboratory equipment, and IEC 60601-1 for medical equipment).
Furthermore all configurations shall comply with the system standard IEC 60601-1-1. Everybody who connects additional equipment to the signal input part or signal output part configures a medical system, and is therefore, responsible that the system complies with the requirements of the system standard IEC 60601-1-1. If in doubt, consult the technical services department or your local representative.



## ■ System configuration example 1 (1-to-1)



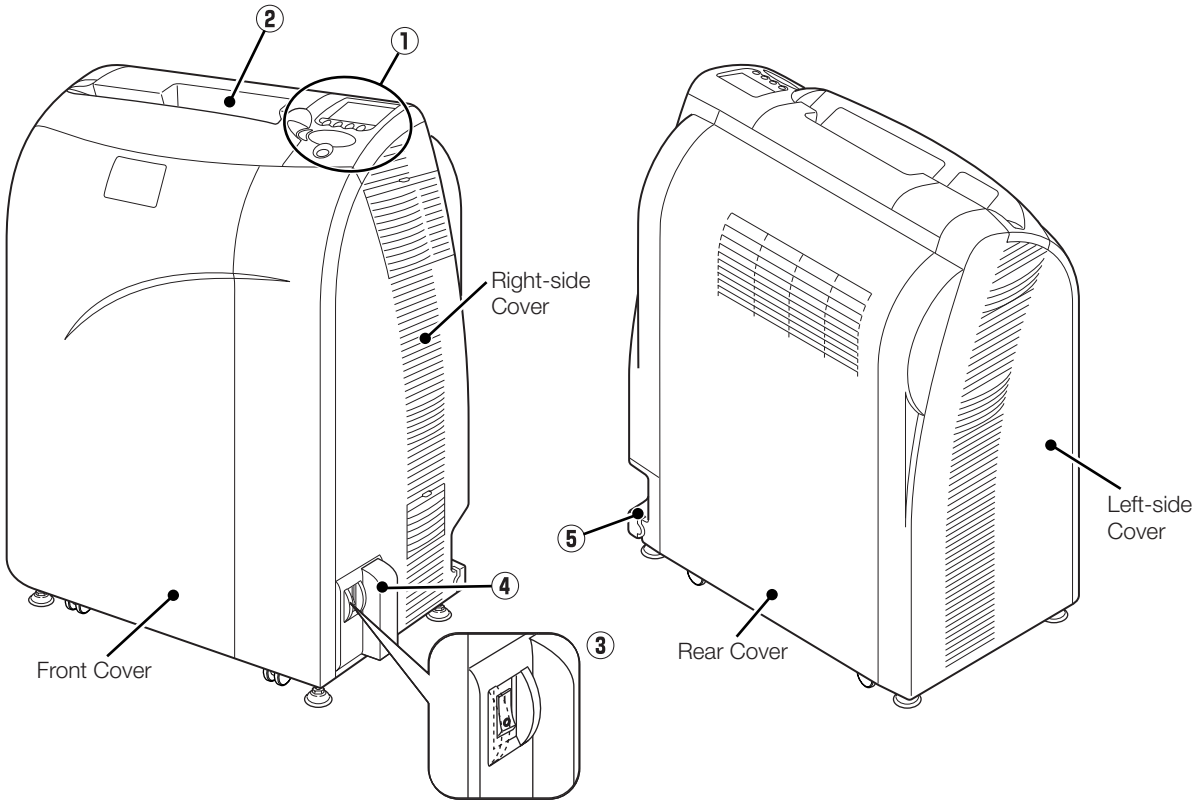

## ■ System configuration example 2 (N-to-M)



# 2.2 Units Names and the Functions

Described below are units component of the FCR CARBON X/XL (CR-IR 357/CR-IR 356) main unit and the Operation Panel.
Also presented are configuration of windows that open during the operation and error display configuration.

## 2.2.1 FCR CARBON X/XL (CR-IR 357/CR-IR 356) Main Unit

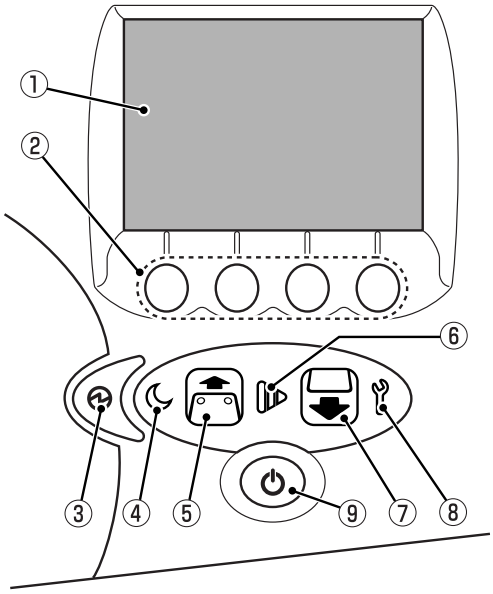



| Name | Function |
|---|---|
| ① Operation Panel | Operation panel for the FCR CARBON X/XL (CR-IR 357/ CR-IR 356). |
| ② Cassette Set Unit with Dust-proof Cover | Used for inserting cassette that contains an exposed IP. Dust-proof cover is provided on this unit. |
| ③ Main Power Switch | Leave it turned ON.<br>ON ( **I** ) : Main Power ON<br>OFF ( **O** ) : Main Power OFF |
| ④ Power Plug | Power plug for this equipment. |
| ⑤ External Device Connector (I/F Cable) | Used for network-connecting the external device. |

**CAUTION**

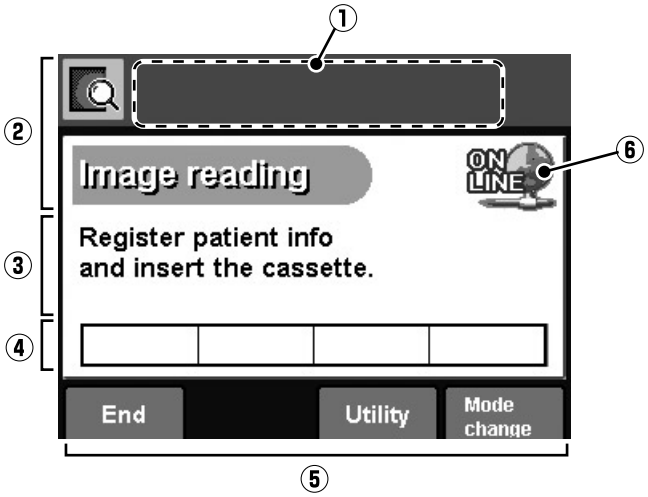
**Do not connect telephone lines to LAN connector.**
**Only the IEC950/UL1950 standard non-shielded cables are appropriate for connection to this connector.**

## 2.2.2 Operation Panel



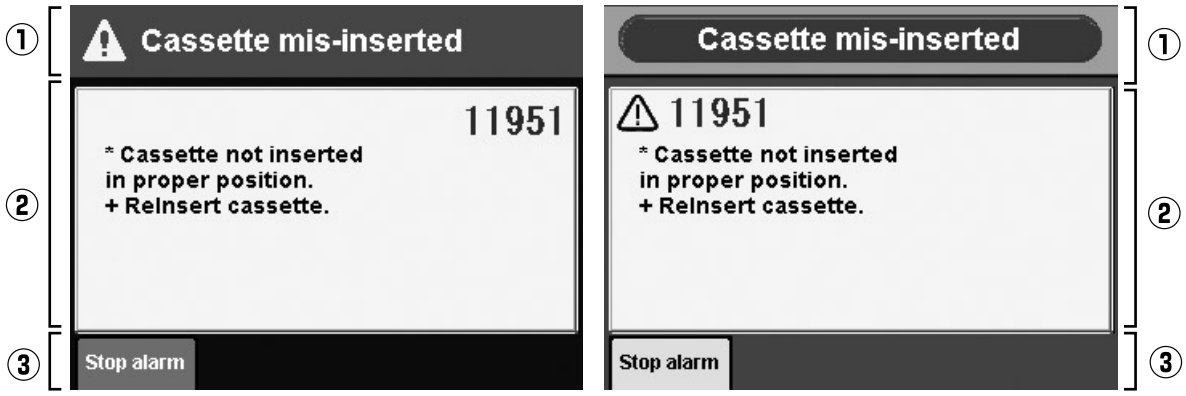

| | Name | | Function |
|---|---|---|---|
| ① | Display Screen | | Displays operation messages, equipment statuses, and others.<br>The basic screen is shown on page **2-6**. |
| ② | Menu Selection Buttons | | When a selection menu appears on the screen, each of the buttons selects/performs the function assigned to it when pressed. |
| ③ | POWER Lamp | | Lights up (green) when the main power switch is pressed toward "**I**" and the power to the FCR CARBON X/XL (CR-IR 357/CR-IR 356) turns ON. If the power ON/OFF control of the FCR CARBON X/XL (CR-IR 357/CR-IR 356) is ganged with the console power, the main power switch is usually kept ON and thus the POWER lamp stays illuminated. |
| ④ | Power Save Lamp | | Blinks when the panel backlight is in OFF status.<br>For details on how to turn the panel backlight OFF, refer to "**4.9 Changing the Length of Time Until the Panel Backlight is Turned OFF**." |
| ⑤ | Cassette Ready Lamp | | Lights up (green) when the FCR CARBON X/XL (CR-IR 357/CR-IR 356) has started up normally, indicating that a cassette can be inserted. When this lamp is out, no cassette insertion is possible.<br>For details, see page **2-8**. |
| ⑥ | Cassette Processing Lamp | | Indicates the status of cassette processing.<br>ON (green) : When the cassette has been correctly inserted.<br>Flashing (green) : When image erasure is complete.<br>OFF : When the IP has been returned into the cassette.<br>For details, see page **2-8**. |
| ⑦ | Cassette Removal Lamp | | Flashes (blue) when the processed cassette becomes ready for removal. When the cassette is removed, the lamp goes out.<br>For details, see page **2-8**. |
| ⑧ | CALL Lamp | | Flashes (yellow) if some sort of error occurs. Depending on settings, an alarm may also sound to alert you to the occurrence of the error. Handle the error in accordance with the message displayed on the screen. When the error has been resolved, the lamp goes off. |
| ⑨ | Power ON Switch | | Turns on/off the power to the FCR CARBON X/XL (CR-IR 357/CR-IR 356). This button is used when the FCR CARBON X/XL (CR-IR 357/CR-IR 356) is started up singly. |

## 2.2.3 Display




| | Name | Function |
|---|---|---|
| ① | Title/Message Display Field | Displays the title of the screen being shown along with an operation message. |
| ② | Message Display Field | Displays the system message. |
| ③ | Patient information/Exposure Information Display Field | Displays patient information and an exposure menu. |
| ④ | Cassette Processing Status Bar | Displays the status of processing operations being performed on the inserted cassette.<br>For details, see page **2-8**. |
| ⑤ | Selection-menu Display Field | A menu of user-selectable options (buttons) are displayed. Pressing a menu-selection key executes the function assigned to that button. |
| ⑥ | Master CR Console Connection Status Monitor | Displays the connection status with the Master CR Console. When the connection is established (connected) correctly, ON LINE will be displayed. Otherwise, OFF LINE will be displayed. |

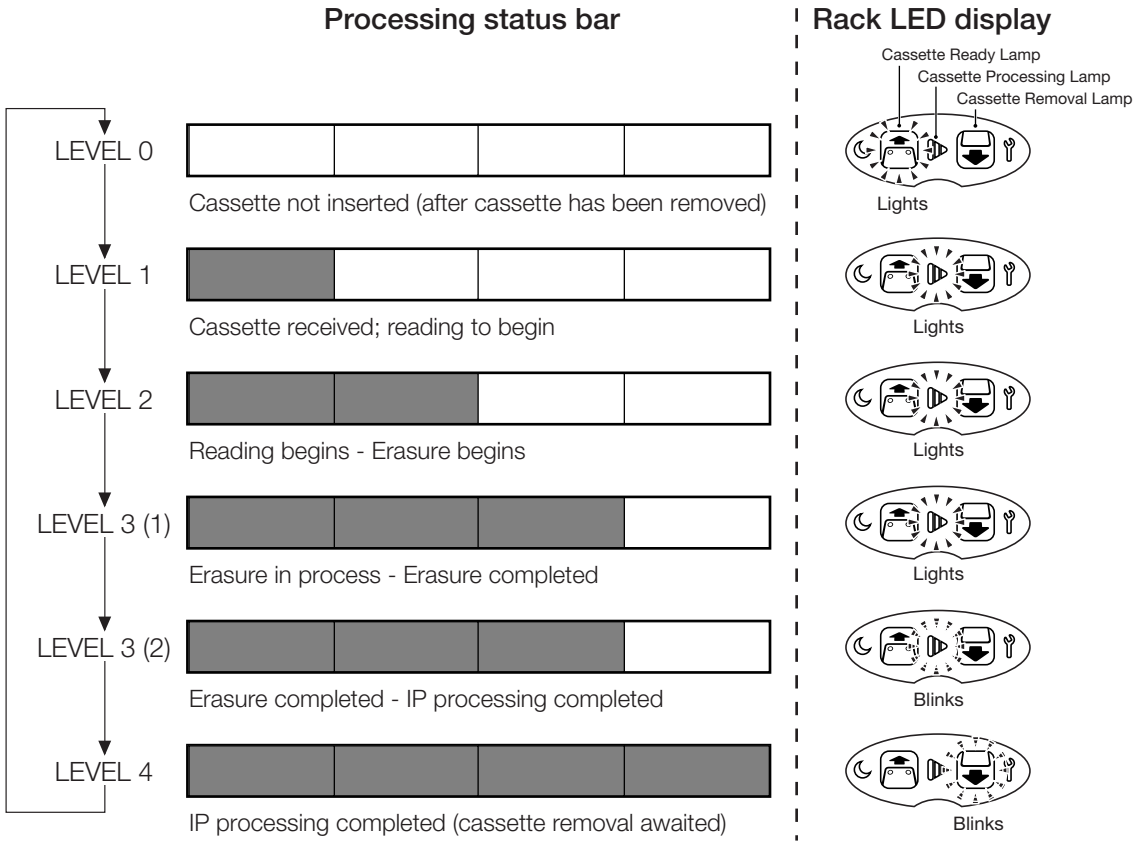
## ■ Error Screen (Example)




| Name | Function |
|---|---|
| ① Title Display Field | Displays an error title. |
| ② Message Display Field | Displays a message prompting the user to perform an operation. |
| ③ Selection-menu Display Field | A menu of user-selectable options (buttons) are displayed. Pressing a menu-selection key executes the function assigned to that button. |

## 2.2.4 Processing Status Bar

The diagram below shows the processing status bar and lamp indication, corresponding to reading status subsequent to cassette insertion.



# Chapter 3

# Basic Operation



Pages

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3.1.2 Performing Primary Erasure ____ 3-3
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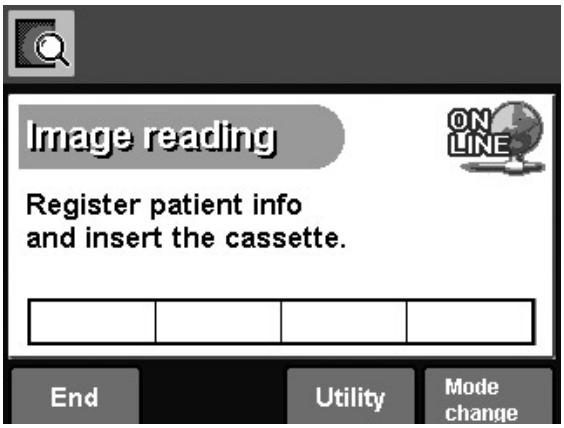
# 3.1 Before Use

**In order to prevent image degradation of IPs that you are going to use for the first time for the day's work, perform secondary (simple) erasure on them before use.**
**If it is necessary to erase an IP due to a failed exposure or the like without reading the image formed on it, use "primary erasure."**

## 3.1.1 Performing Secondary (Simple) Erasure

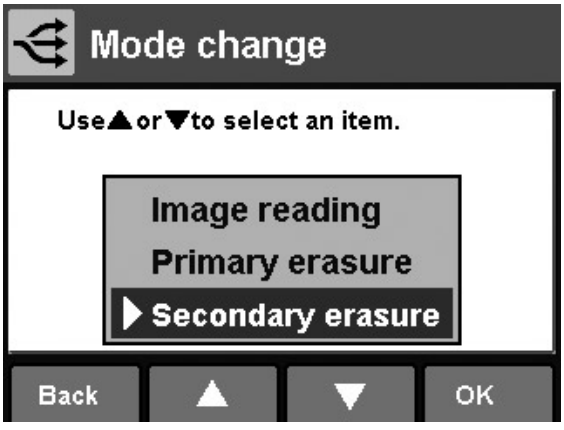
If IPs to be used for the day's radiographic exposure work are not yet used on the day, it is necessary to perform secondary (simple) erasure on them. In the course of this simple erasure, any excess energy each IP has accumulated is dissipated. Even when the IP is stored in a room, it absorbs and accumulates natural radiation such as cosmic rays and radiation energy emanating from radioisotopes contained in construction materials such as those used for floors and walls. If such an energy-loaded IP is used as-is, image degradation may result. By using the following procedure, perform the secondary erasure of the image on the IP.

**1** **Press [Mode change] on the "Initial screen."**




The "Mode change" window appears.

**2** **Using the ▲ or ▼ button, move to the [Secondary erasure] and press the [OK] button.**



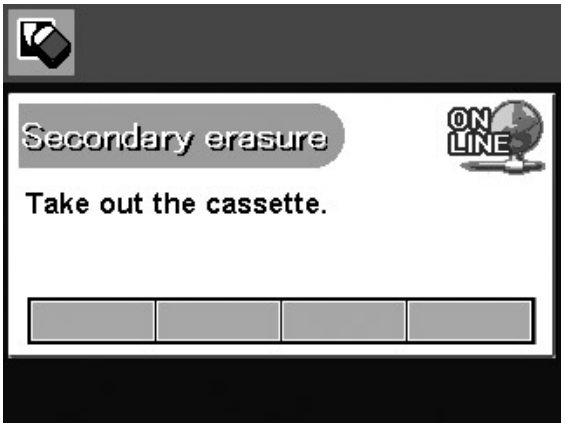

A message will appear.

**3** **Insert a cassette.**

Secondary erasure is performed.

Upon completion of the secondary erasure, a message will appear.

**4** **Take the cassette out.**

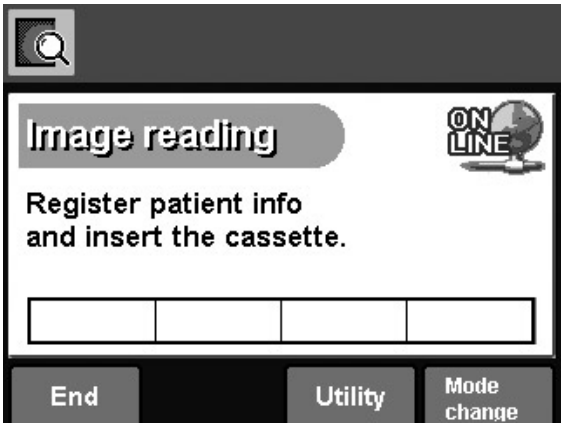



The secondary erasure session is complete and it automatically return to the "Initial screen."

## 3.1.2 Performing Primary Erasure

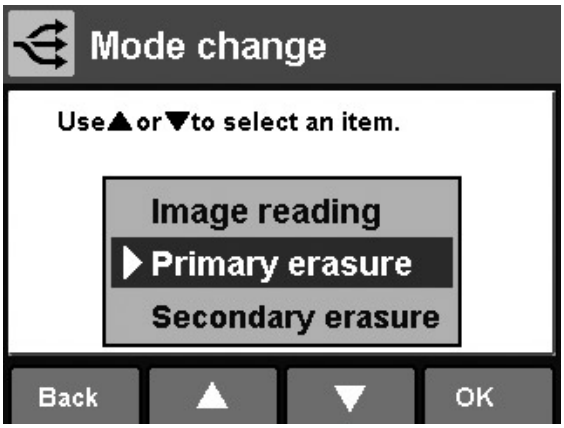
Image is on “over-exposed” or “incorrectly exposed” IP should be erased without fail.
Use the following procedure to perform primary erasure.

**1** **Press [Mode change] on the “Initial screen.”**




The “Mode change” window appears.

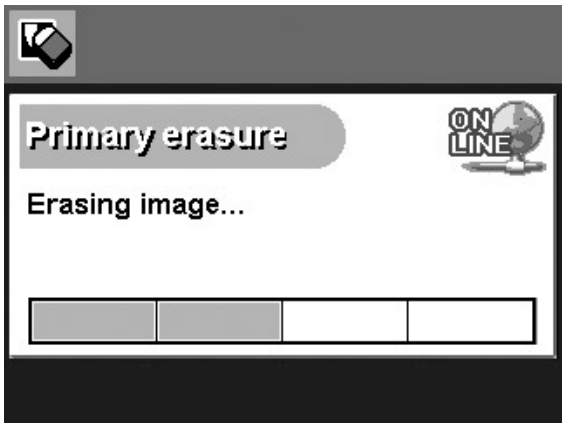
**2** **Using the ▲ or ▼ button, move to [Primary erasure] and press the [OK] button.**




A message will appear.

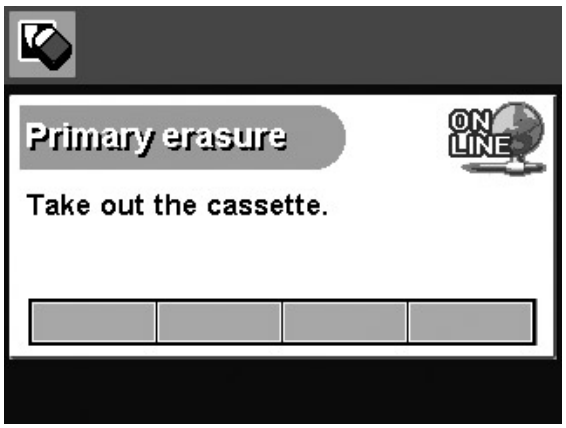
**3** **Insert a cassette.**

Primary erasure is performed.




Upon completion of the primary erasure, a message will appear.

**4** **Take the cassette out.**




The primary erasure session is complete and it automatically return to the “Initial screen.”

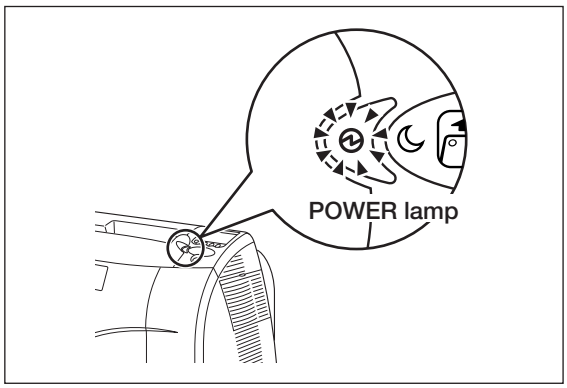
# 3.2 System Startup/Shutdown and Image Reading (CR Console)

**The startup and shutdown of the FCR CARBON X/XL (CR-IR 357/CR-IR 356) is performed under the control of the CR Console's power ON/OFF switch.**
**To start up only the FCR CARBON X/XL (CR-IR 357/CR-IR 356), use the procedure described in [3.3 Starting Up/Shutting Down the FCR CARBON X/XL Main Unit].**
**In sections coming hereafter where the system operation is explained, the "FCR CARBON X/XL (CR-IR 357/CR-IR 356)" is expressed simply as "FCR CARBON X/XL."**

## 3.2.1 Starting Up the System

**1 Confirm that the POWER lamp on the FCR CARBON X/XL's operation panel is on.**

If the POWER lamp is not lit, turn the Power ON Switch.




**2 Firstly, press the power ON/OFF switch of the Console's monitor, and secondly press the power ON/OFF switch of the Console itself.**

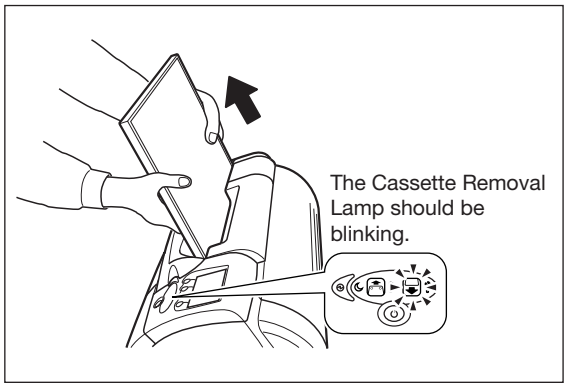
**⚠CAUTION**

**Turn ON the monitor ahead of the Console itself. If you do it the other way round, the touch panel may not respond.**
**You are, therefore, recommended to keep the monitor ON during the day.**

The console's application software starts. When the Console starts, the "Patient Information Input" window appears.

## 3.2.2 Shutting Down the System

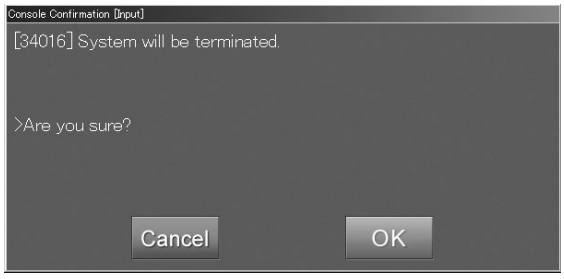
**1** **After making certain that the FCR CARBON X/XL has finished reading the cassette, take the cassette out.**




If a cassette remains inserted in the cassette set unit, remove the cassette.

**2** **On a screen from which the console can be shut down, select [Shut Down].**

**3** **The following dialog appears. Press [OK].**




The system is turned OFF automatically.

**4** **Turn the monitor OFF.**

HINT

For the operation of the CR Console and the User Utility, refer to the appropriate sections of the "**CR Console Operation Manual**," the "**CR Console Operation Guide**," and "**CR Console Operation Manual — The User Utility Operations**."

## 3.2.3 Reading Cassette Images

**CAUTION**

**Before using a cassette, ensure that it is applicable to the Image Reader.**
**Using a cassette not applicable to the Image Reader will disable image reading on it.**

Before reading a cassette IP image, register patient information and study menus on the CR Console for the purpose of X-raying the patient.
Described herein is the procedure covering steps up to reading exposed images.

**1 Input patient information and then select study menus and exposure menus. (CR Console)**

For details on how to register patient information and operate study menus on the CR Console, refer to the appropriate sections of the "**CR Console Operation Manual**," "**CR Console Operation Guide**" and "**CR Console Operation Manual — The User Utility Operations**."

**HINT**

With the FCR CARBON XL (CR-IR356), you can change image reading mode on the connected CR Console.
For details of available image reading mode, refer to the Operation Manual that describes the User Utility functions of the connected Console.

**2 Subject a patient to X-ray exposure.**

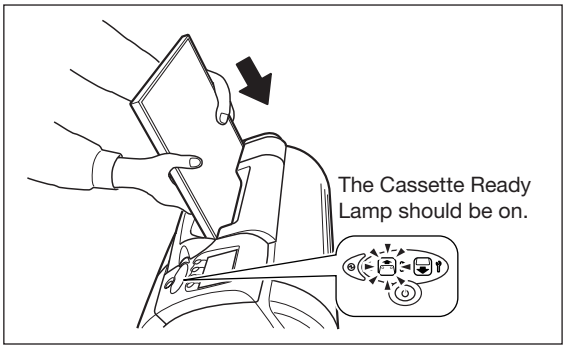
**3 Read the exposed image. (FCR CARBON X/XL)**

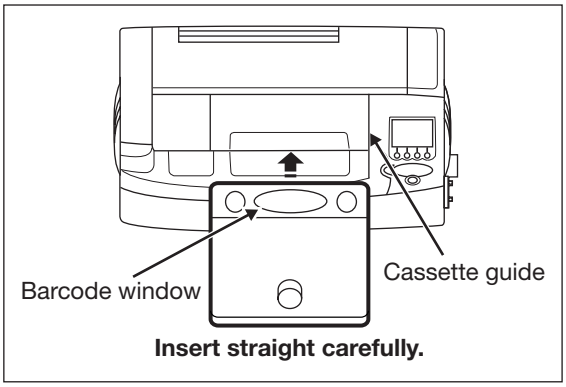
Explained below is the procedure to read images of a cassette inserted into the FCR CARBON X/XL.

***1.*** **Confirm that the Cassette Ready Lamp is lit (green) on the operation panel.**

***2.*** **Insert a cassette into the equipment in alignment with the guide on the right, with the cassette's barcode window facing as illustrated below.**

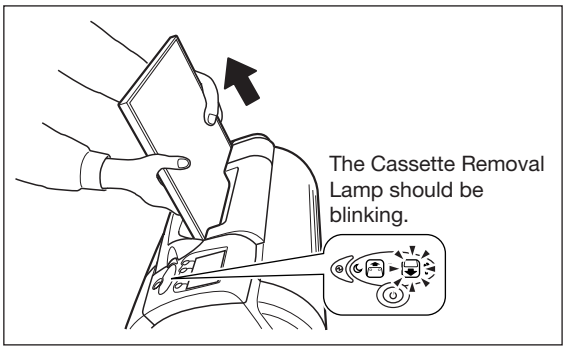
- Remove the exposure marker from the cassette before inserting the cassette in the Image Reader.
- Insert the cassette in the Image Reader after confirming the sides and the direction of the cassette. Moreover, insert the cassette straight and slowly.
  If a cassette is inserted incorrectly wrong side or direction, like at a slant, the Image Reader can be damaged.
- Do not shake the Image Reader or the cassette while reading the image.
  Such as uneven image, which will prevent image reading, might be generated.
- After inserted a cassette into the Image Reader, do not touch the cassette until the Cassette Removal Lamp lights.
  Touching an inserted cassette while image reading may cause the Image Reader failure.



**Insert straight carefully.**

***3.*** **Confirm that the Cassette Removal Lamp is blinking (blue) on the operation panel and then remove the cassette.**

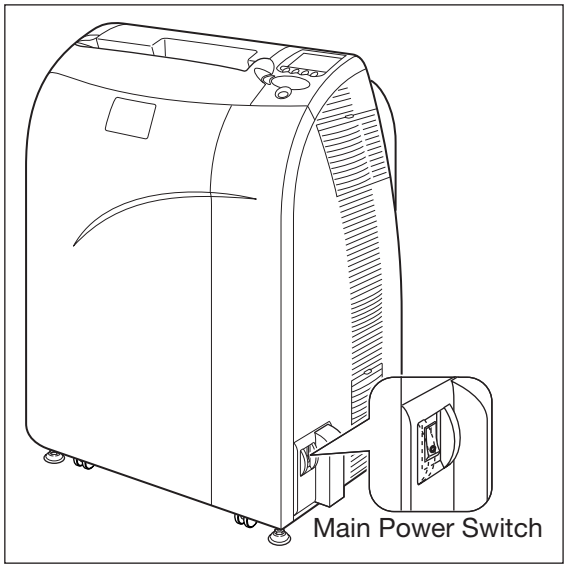


# 3.3 Starting Up/Shutting Down the FCR CARBON X/XL Main Unit

**This section explains how to start up/shut down the FCR CARBON X/XL main unit.**
**To operate the CR Console, use the procedure described in "3.2.1 Starting Up the System."**

**1** **Ensure that the Main Power Switch of the FCR CARBON X/XL has been turned ON.**

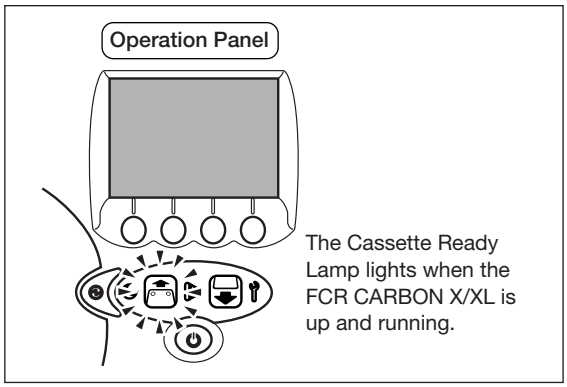
If the Main Power Switch has not been turned ON, turn it ON accordingly.




## To start up the FCR CARBON X/XL main unit

**2** **Turn ON the power to the FCR CARBON X/XL.**

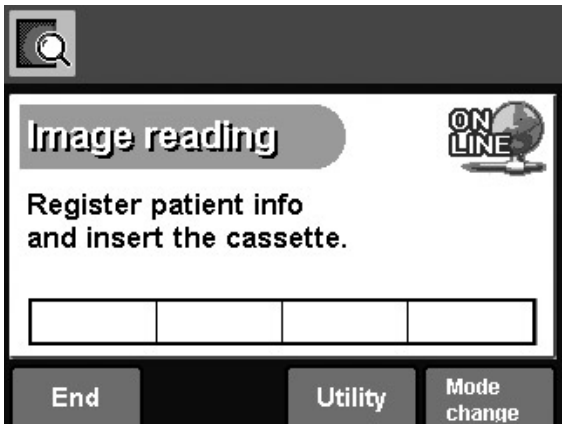
Press the POWER ON Switch on the operation panel to turn the power ON.




When the FCR CARBON X/XL is up and running, the Cassette Ready Lamp lights on the operation panel.

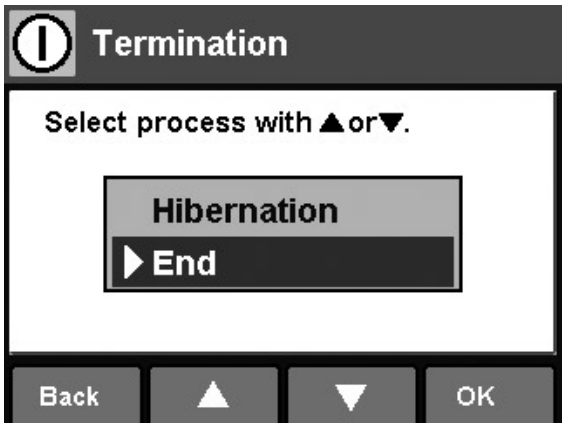
## To shut down the FCR CARBON X/XL main unit

**2** **Press the [End] button on the "Initial screen."**




The "Termination" window opens and the Cassette Ready Lamp goes off on the operation panel.

**3** **Use ▲ or ▼ button to select [End] and then press the [OK] button.**




The "Terminating…" message appears and the window closes.
(Note that the POWER Lamp remains lit.)

HINT

If you select [**Hibernation**], the equipment will go into hibernation. This is the same status as the power has been turned OFF.
For details on how to let the system go into hibernation automatically, refer to "**4.10 Changing the Length of Time (on the Hibernation Timer) Until the Hibernation is Activated**."

# Chapter 4

# Utility


Pages

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4.3 Displaying Equipment Information ____ 4-4
4.4 Cleaning the Scanner ____ 4-5
4.5 Changing the Alarm Volume Level ____ 4-6
4.6 Changing the Way an Alarm is Stopped ____ 4-7
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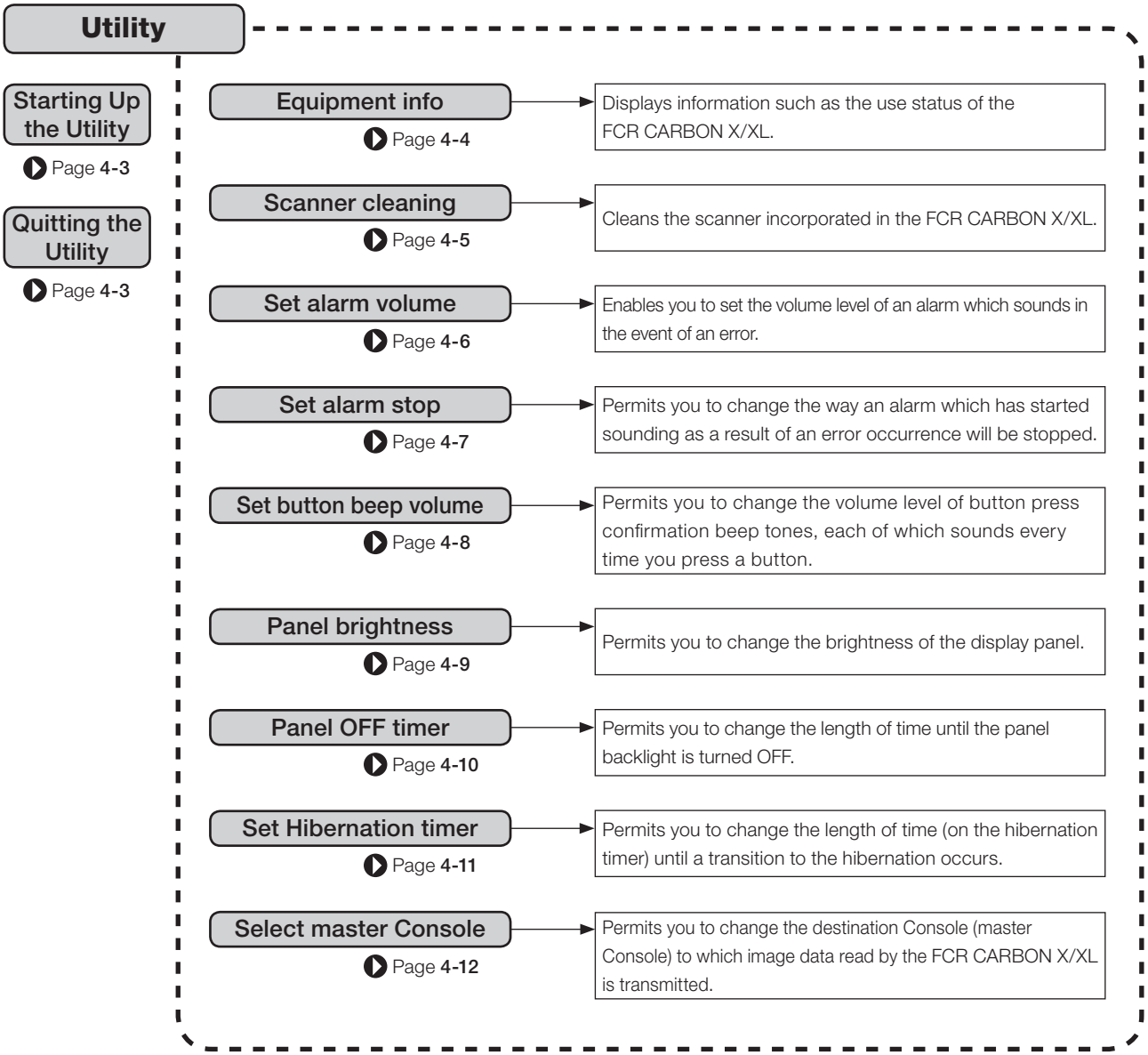
4.11 Changing the Master Console ____ 4-12

# 4.1 Guide to Utility Features

**Using utility features, you can make a range of environment settings under such headings as alarm sounds, screen brightness and power savings. A listing of the available utility features is shown below.**

For details about how to operate a given utility feature, refer to the section preceded by the symbol (◐) .

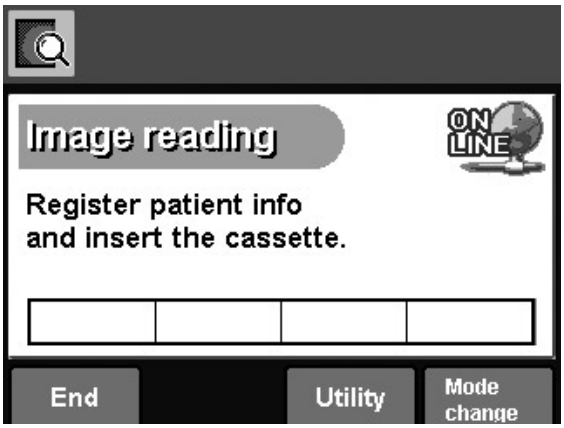

Utility
Starting Up the Utility
◐ Page 4-3
Quitting the Utility
◐ Page 4-3
Equipment info
◐ Page 4-4
Displays information such as the use status of the FCR CARBON X/XL.
Scanner cleaning
◐ Page 4-5
Cleans the scanner incorporated in the FCR CARBON X/XL.
Set alarm volume
◐ Page 4-6
Enables you to set the volume level of an alarm which sounds in the event of an error.
Set alarm stop
◐ Page 4-7
Permits you to change the way an alarm which has started sounding as a result of an error occurrence will be stopped.
Set button beep volume
◐ Page 4-8
Permits you to change the volume level of button press confirmation beep tones, each of which sounds every time you press a button.
Panel brightness
◐ Page 4-9
Permits you to change the brightness of the display panel.
Panel OFF timer
◐ Page 4-10
Permits you to change the length of time until the panel backlight is turned OFF.
Set Hibernation timer
◐ Page 4-11
Permits you to change the length of time (on the hibernation timer) until a transition to the hibernation occurs.
Select master Console
◐ Page 4-12
Permits you to change the destination Console (master Console) to which image data read by the FCR CARBON X/XL is transmitted.

# 4.2 Starting Up and Quitting the Utility

Described herein is the procedure used to start/quit the utility for the FCR CARBON X/XL.

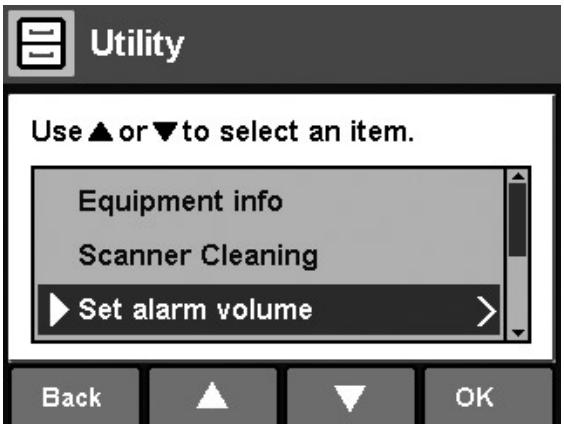
## Starting Up the Utility

**1** On the “Initial screen” press the [**Utility**] button.



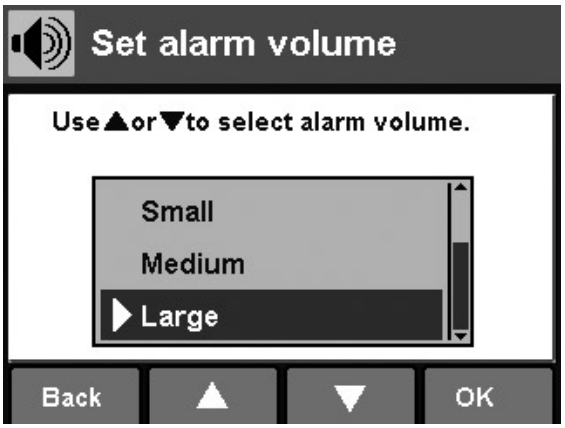

The utility starts up and the “Utility TOP” window opens.

**2** Using the ▲ or ▼ button, move to a utility item of interest and press the [**OK**] button.




The setting window for the selected utility item appears.

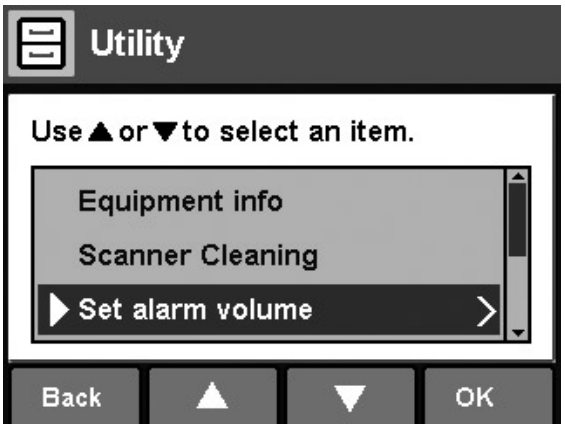
**3** Specify a setting of interest and press [**OK**].




The setting you have specified takes effect and it automatically return to the “Utility TOP” window.

## Quitting the Utility

**1** On the “Utility TOP” window press the [**Back**] button.

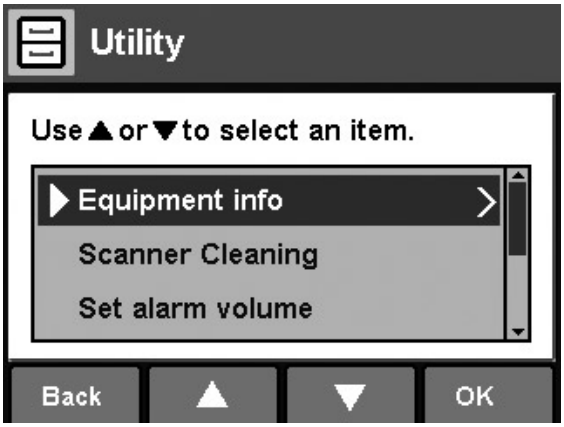



The utility quits and it automatically return to the “Initial screen.”

# 4.3 Displaying Equipment Information

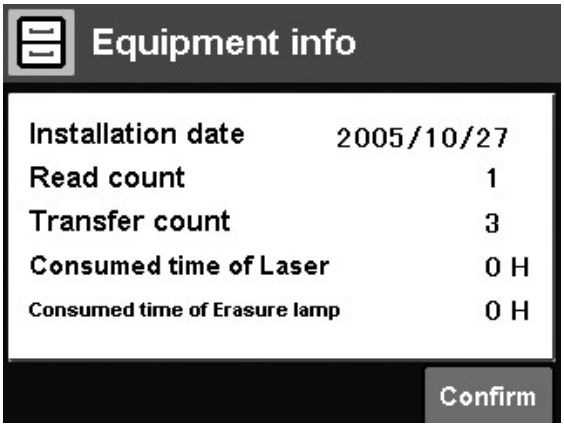
You can display the use status of the FCR CARBON X/XL. Items of information that can be displayed are the date the FCR CARBON X/XL was installed, the number of image scans performed, the number of IP transports, the total time the laser has been on and the cumulative number of hours during which the erasure lamp has been powered on.

**1** On the “Utility TOP” window, select [**Equipment info**] and press the [**OK**] button.




The “Equipment info” window appears.

**2** After viewing the equipment information, press the [**Confirm**] button.

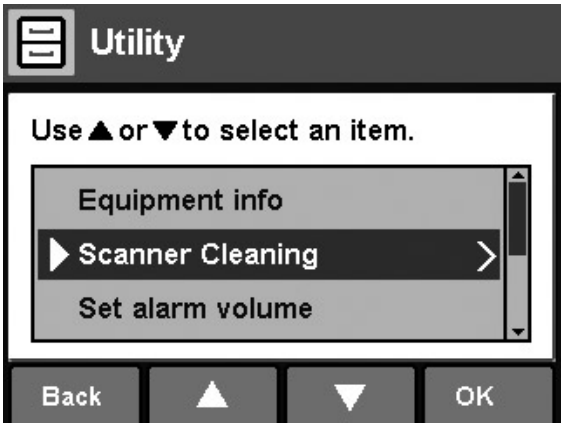



It automatically return to the “Utility TOP” window.

# 4.4 Cleaning the Scanner

You can clean the FCR CARBON X/XL's built-in scanner.

**1** On the "Utility TOP" window, select [**Scanner Cleaning**] and press the [**OK**] button.




The "Scanner Cleaning" window appears.

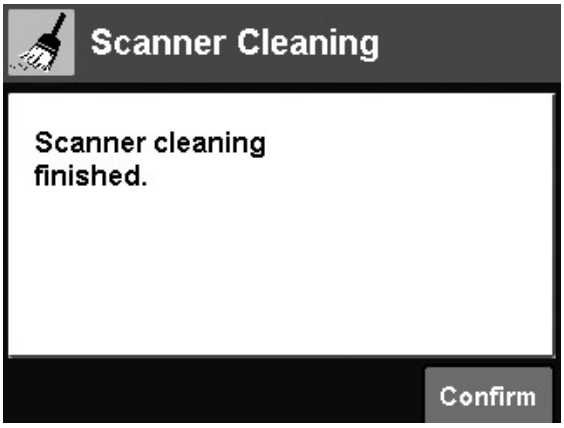
**2** Press the [**Execute**] button.

The cleaning of the scanner begins.

HINT

To cancel scanner cleaning and return to the "Utility TOP" window, press the [**Back**] button.

**3** When the scanner cleaning completion appears, press the [**Confirm**] button.

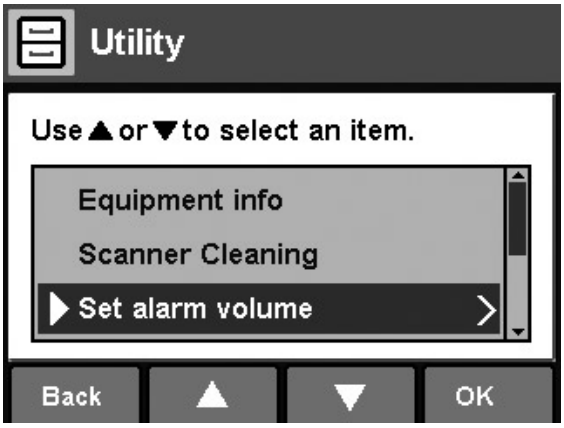



It automatically return to the "Utility TOP" window.

# 4.5 Changing the Alarm Volume Level

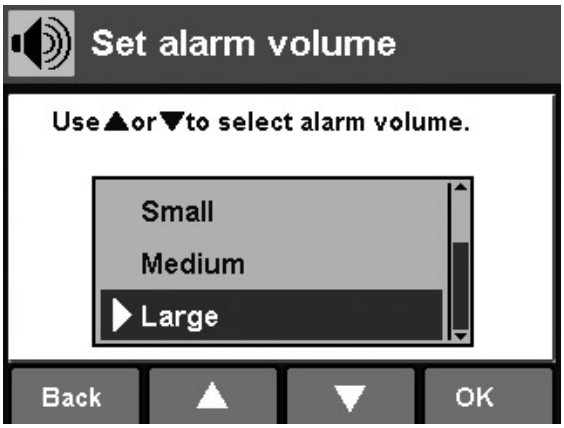
You can change the volume of an alarm which is generated in the event of an error.

**1** On the “Utility TOP” window, select [**Set alarm volume**] and press the [**OK**] button.




The “Set alarm volume” window appears.

**2** Using the ▲ or ▼ button, select a volume level and press the [**OK**] button.




You can choose one of the following:

OFF : Turns off alarm sounds.
Small : Sets the alarm volume level to low.
Medium : Sets the alarm volume level to medium.
Large : Sets the alarm volume level to high.

The volume level is changed accordingly and it automatically return to the “Utility TOP” window.

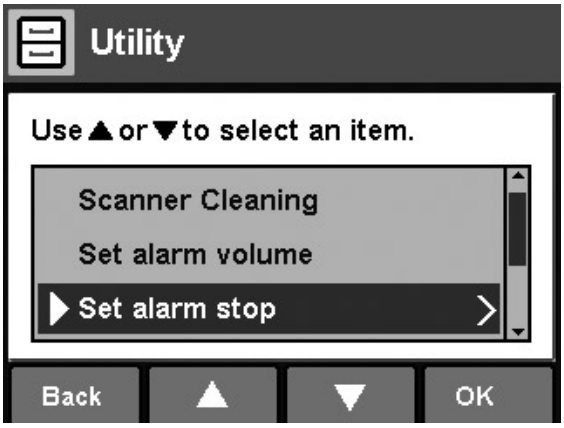
HINT

To go back to the “Utility TOP” window without changing the alarm volume level, simply press the [**Back**] button.

# 4.6 Changing the Way an Alarm is Stopped

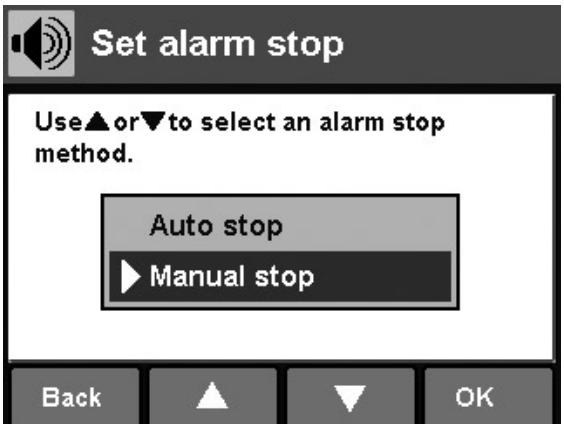
**You can change the way an alarm which has started sounding as a result of an error occurrence, will be stopped.**

**1** **On the “Utility TOP” window, select [Set alarm stop] and press [OK].**




The “Set alarm stop” window appears.

**2** **Using the ▲ or ▼ button, select an alarm stop method and press the [OK] button.**




You can choose between the following alarm stop methods:

Auto stop :
An alarm will automatically stop sounding upon the elapse of a predetermined amount of time. (This amount of time was preset at installation time.)

Manual stop :
Once an alarm goes off, it will keep on sounding until the alarm stop button is pressed manually.

The alarm stop method has been changed and it automatically return to the “Utility TOP” window.

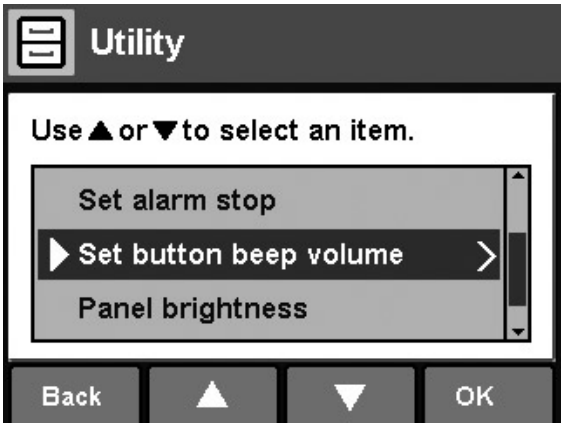
HINT

To go back to the “Utility TOP” window without changing the alarm stop method, press the [**Back**] button.

# 4.7 Changing the Button Press Beep Volume

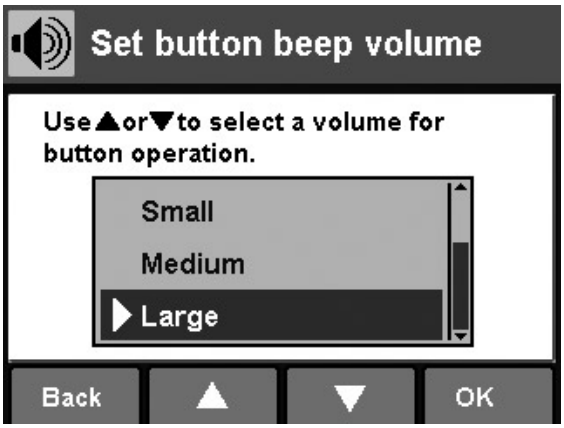
You can change the volume of a button press beep which sounds upon every button press.

**1** On the “Utility TOP” window, select [**Set button beep volume**] and press [**OK**].




The “Set button beep volume” window appears.

**2** Using the ▲ or ▼ button, select a volume level and press the [**OK**] button.




You can choose one of the following:

OFF : Turns off the button press beep.
Small : Sets the volume of the button press beep to small.
Medium : Sets the volume of the button press beep to medium.
Large : Sets the volume of the button press beep to large.

The volume of the beep that sounds upon each button press is changed and it automatically return to the “Utility TOP” window.

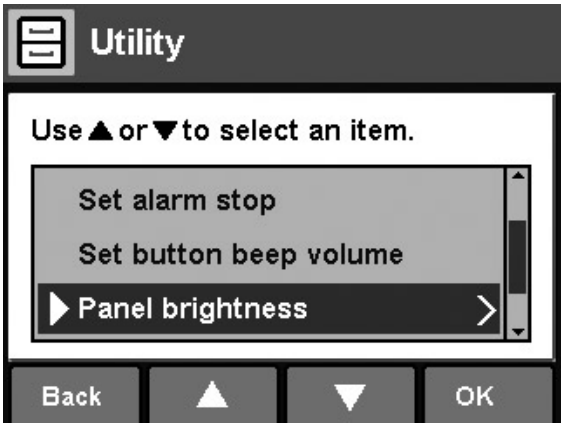
HINT

To go back to the “Utility TOP” window without changing the volume of the button press beep, press the [**Back**] button.

# 4.8 Changing the Brightness of the Panel

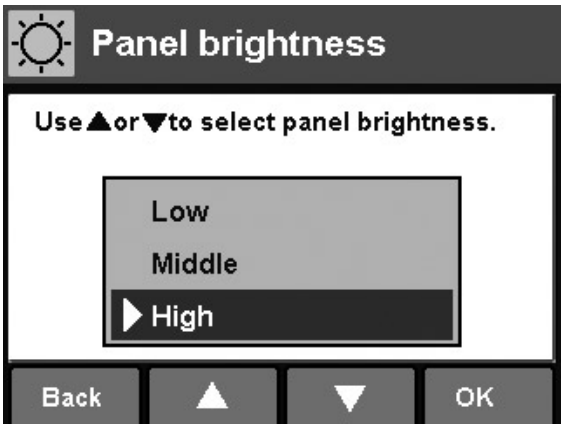
You can change the panel brightness.

**1** On the “Utility TOP” window, select [**Panel brightness**] and press [**OK**].




The “Panel brightness” window appears.

**2** Using the ▲ or ▼ button, select a brightness level and press the [**OK**] button.




You can choose one of the following brightness levels:

Low : Sets the brightness level to low (dark).
Middle : Sets the brightness level to medium.
High : Sets the brightness level to high (bright).

The panel brightness level is changed and it automatically return to the “Utility TOP” window.

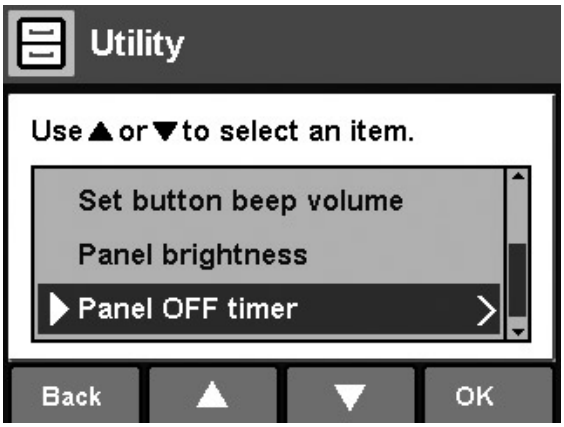
HINT

To go back to the “Utility TOP” window without changing the panel brightness level, press the [**Back**] button.

# 4.9 Changing the Length of Time Until the Panel Backlight is Turned OFF

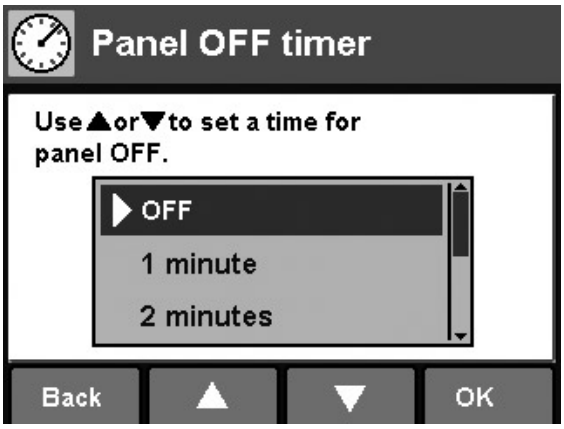
**On the FCR CARBON X/XL, you can change the length of time from when the Cassette Ready Lamp goes ON to when the panel backlight is to be automatically turned OFF. By so doing, you can cut down on the power consumption of the FCR CARBON X/XL. When the panel backlight is turned OFF, the Power Save Lamp starts blinking. To activate the display so that the operation is resumed, press a selection button or insert a cassette.**

**1** **On the "Utility TOP" window, select [Panel OFF timer] and press [OK].**




The "Panel OFF timer" window appears.

**2** **Using the ▲ or ▼ button, select a time period to elapse until panel turn-off and press the [OK] button.**




OFF : Does not turn off the backlight of the panel.

You can select a time period until backlight turn-off from among the following:

1, 2, 4, 8, 15, 30, 60 and 120 min.

The time until the backlight is turned off is changed and it automatically return to the "Utility TOP" window.

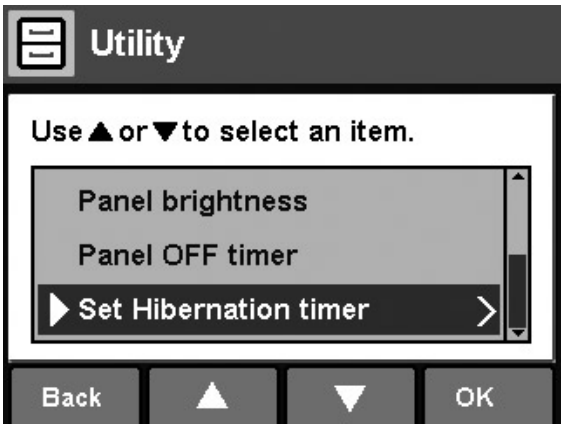
HINT

To go back to the "Utility TOP" window without changing the delay time for panel backlight shut-off, press the [**Back**] button.

# 4.10 Changing the Length of Time (on the Hibernation Timer) Until the Hibernation is Activated

**On the FCR CAPSULA X/XL, you can change the length of time from when the Cassette Ready Lamp goes ON to when the Hibernation (power-saving mode) is activated. By so doing, you can cut down on the power consumption of the FCR CARBON X/XL. The hibernation is the same status as the power has been turned OFF. To cancel the hibernation so that the operation can be resumed, press the Power ON Switch.**

**1** On the "Utility TOP" window, select [**Set Hibernation timer**] and press [**OK**].




The "Set Hibernation timer" window appears.

**2** Using the ▲ or ▼ button, select a time period to elapse until power-saving mode activation and press the [**OK**] button.

OFF : Does not place the FCR CARBON X/XL into the hibernation.

You can select a time period until the hibernation is activated from among the following:
1, 2, 4, 8, 15, 30, 60 and 120 min.

The length of time to elapse until the hibernation is activated is changed and it automatically return to the "Utility TOP" window.

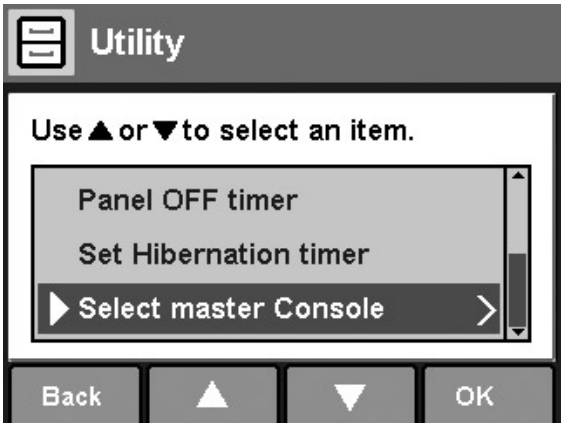
HINT

To go back to the "Utility TOP" window without changing the length of time for hibernation is activated, press the [**Back**] button.

# 4.11 Changing the Master Console

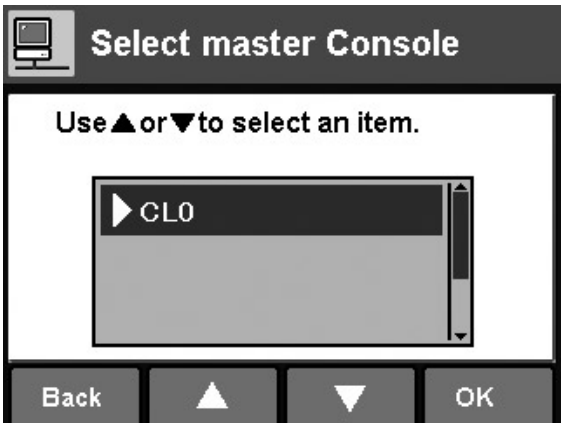
**You can change the destination Console (master Console) to which image data read by the FCR CARBON X/XL is transmitted. You can select one as the master Console from among consoles that are connected to the FCR CARBON X/XL. Up to four such consoles may be displayed as candidates for the master Console.**

**1** **On the "Utility TOP" window, select [Select master Console] and press [OK].**




The "Select master Console" window appears.

**2** **Using the ▲ or ▼ button, select a master-Console candidate and press the [OK] button.**




The master Console is changed and it automatically return to the "Utility TOP" window.

HINT

To go back to the "Utility TOP" window without changing the master Console, press the [**Back**] button.

# Chapter 5

# Troubleshooting


Pages

5.1 Troubleshooting ____ 5-2
5.2 If the FCR CARBON X/XL Cannot be Powered ON ____ 5-3
5.3 If the FCR CARBON X/XL Cannot be Powered OFF ____ 5-4
5.4 When An Error Message Appears ____ 5-5
5.5 When Image Is Streaked ____ 5-9

# 5.1 Troubleshooting

When the equipment does not operate normally, see the relevant page for you to take necessary actions appropriately, according to the symptom shown below.
In case you encounter any trouble you cannot handle, please contact your local authorized distributor.

**In Case a Problem May Arise**

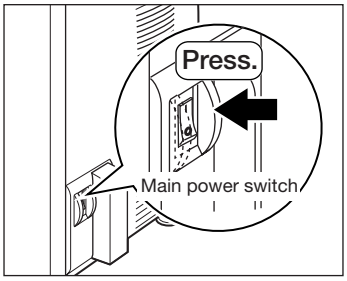

- If the FCR CARBON X/XL Cannot be Powered ON - - - - Page 5-3
- If the FCR CARBON X/XL Cannot be Powered OFF - - - - Page 5-4
- When An Error Message Appears - - - - Page 5-5
- When Image Is Streaked - - - - Page 5-9

# 5.2 If the FCR CARBON X/XL Cannot be Powered ON

**If the FCR CARBON X/XL cannot be powered ON even when you have pressed the POWER button, please make the following checks:**

**The Main Power Switch has been turned OFF.**

☞ Set the Main Power Switch to the "**I**" side to turn it ON.

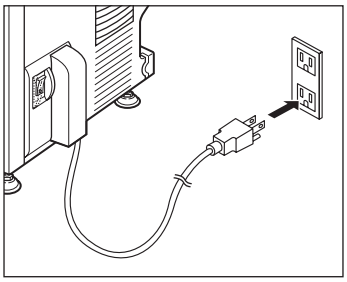



HINT

When AC mains power is being applied to the FCR CARBON X/XL, the POWER lamp on the operation panel illuminates green.

**The power cord has been disconnected.**

☞ Turn OFF the main power switch (by setting it to the "**O**" position), securely plug the AC cord into a wall outlet and turn the main power switch ON (by setting it to the "**I**" position).

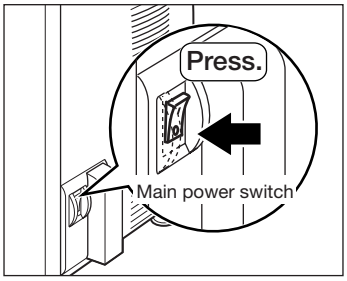


HINT

When AC mains power is being applied to the FCR CARBON X/XL, the POWER lamp on the operation panel illuminates green.

# 5.3 If the FCR CARBON X/XL Cannot be Powered OFF

**If the FCR CARBON X/XL cannot be powered off even when you have performed normal shutdown procedures, please make the following checks:**

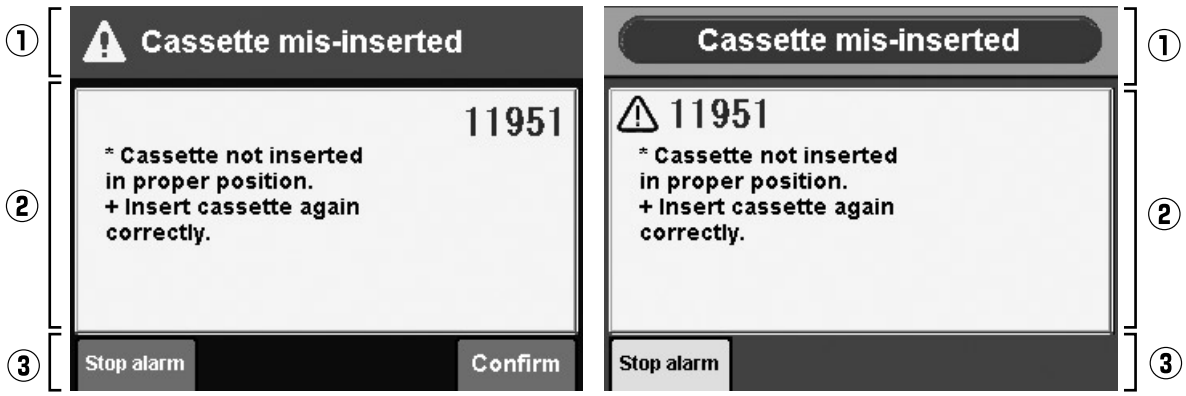
| | | |
|---|---|---|
| **Isn't there any yet-to-be-transmitted image still remaining in the FCR CARBON X/XL?** | ☞ Shut down the FCR CARBON X/XL after transmitting any remaining image. | |
| **More than five minutes have passed since the [Shutdown] button had been pressed.** | ☞ Turn OFF (press to the "**O**" side) the Main Power Switch at the bottom right-side corner on the front of the equipment. |  |

# 5.4 When An Error Message Appears

**This section provides a listing of error messages that can appear on the screen of the FCR CARBON X/XL along with their meanings and examples of ways of dealing with them. Should you encounter any trouble you cannot handle, contact your local authorized distributor.**

An example of an error-message screen and a description of each display area are given below:

## ■ Example of an error-message screen




| | Name | Description |
|---|---|---|
| ① | Title Display Field | The title of an error is displayed. |
| ② | Message Display Field | An error code and a corresponding message prompting user action are displayed. |
| ③ | Selection-menu Display Field | A menu of user-selectable options (buttons) are displayed. Pressing a menu-selection key executes the function assigned to that button. |

## Here is the list of error codes:

| Error code | Message title | Description | Corrective action |
|---|---|---|---|
| 11200 | HV-OFF | Since the HV SW for the photomultiplier is faulty, image scanning cannot be performed. | Contact your local authorized distributor. |
| 11273<br>11906 | Laser power low | The image reading unit's laser power has come down. | Contact your local authorized distributor. |
| 11287 | Image signal error | Image signal cable connection may be faulty. | Contact your local authorized distributor. |
| 11373<br>11374<br>11375<br>11377<br>11378<br>11381<br>11951 | Cassette misinserted | Cassette may be inserted improperly in terms of position. | Press "Eject" to take the cassette out first, and then correctly insert it again. |
| 11379 | Can't unlock cassette | Since cassette is improperly inserted in terms of position, lock cannot be undone. | While pushing the cassette toward the far right side, press "Unlock." |
| 11382 | Wrong type cassette | Cassette of this type is not supported. | Press "Eject." Scan the removed cassette using an image reader that is compatible with that cassette. |
| 11389<br>11390<br>11396<br>11397<br>11413<br>11414<br>11465<br>11466<br>11510 | Unread IP ejected | IP failed to be read. | Press "Eject." Insert the removed cassette again to have the IP scanned. |
| 11398 | Out-of-spec IP size | IP of this size is not supported. | Press "Eject." After removal, scan the removed cassette using an image reader that is compatible with that cassette. |
| 11403 | Can't read IP barcode | The barcode No. of the IP failed to be read. | Enter the IP's barcode No. via the Console. |
| 11406 | Out-of-spec IP type | IP of this type is not supported. | Press "Eject." After removal, scan the removed cassette using an image reader that is compatible with that cassette. |
| 11453 | Wrong cassette size | Cassette of this size is not supported. | Press "Eject." After removal, insert again a cassette of the size specified by the message. |
| 11454<br>11950 | Cassette eject request | Cassette cannot be inserted. | Remove the cassette. |
| 11489 | Scanner fan failure | Cooling fan is faulty. The cooling fan needs replacing as soon as possible. | Contact your local authorized distributor. |

| Error code | Message title | Description | Corrective action |
|---|---|---|---|
| 11498 | Load empty cassette | IP remains sitting inside the FCR CARBON X/XL. | Insert a cassette of the size specified by the message. |
| 11511 | PatientInfo unregistered | Patient information is not registered yet. | Remove the cassette. Register patient information from the console and then insert the cassette again to have the image scanned. |
| 11512 | PatientInfo unrecognized | Since patient information could not be recognized, the IP has been returned into the cassette. | Press “Eject.” After removal, scan again the IP No. of the cassette using the barcode reader. |
| 11530 | Resend image | Since image could not be transmitted, a resend is attempted. | Check the conditions of the console, connections cables, and hub. |
| 11531 | Image send failure | Image could not be sent. | Press “Eject” and remove the cassette. |
| 11700 | Dead erase lamp | Since some erasing lamp(s) is dead, image erasure time is extended. The erasing lamps need inspection as soon as possible. | Contact your local authorized distributor. |
| 11701 | Erase incomplete | Since erasing lamps are dead, image erasure is not possible. Erasing lamps need replacing. | Contact your local authorized distributor. |
| 11702 | Replace erase lamp | Erasing lamps need replacing. | Contact your local authorized distributor. |
| 11703 | Life end. Long erasure | Due to the end-of-life of erasing lamps, the image erasure time is extended. Lamp changing should be done as soon as possible. | Contact your local authorized distributor. |
| 11704 | Life end. Poor erasure | Because of the end-of-life of erasing lamps, image cannot be erased. The erasing lamps need replacing. | Contact your local authorized distributor. |
| 11710 | Erase-lamp temp. sensor fail | Since temperature sensor is faulty, image cannot be erased. The temperature sensor needs replacing. | Contact your local authorized distributor. |
| 11720 | Failed cooling fan | Since cooling fan for erasing lamps is faulty, image cannot be erased. The cooling fan needs replacing. | Contact your local authorized distributor. |
| 11760 | IP erase incomplete | Image on IP is not completely erased. | Press “Eject.” Remove the cassette once, insert it again, and then erase the image. |
| 11901 | Worn air filter | Air filter is worn and needs replacing as soon as possible. | Contact your local authorized distributor. |
| 11902 | Worn brush roller | Brush roller is worn and needs replacing as soon as possible. | Contact your local authorized distributor. |
| 11903 | Worn damper | Damper is worn and needs replacing as soon as possible. | Contact your local authorized distributor. |

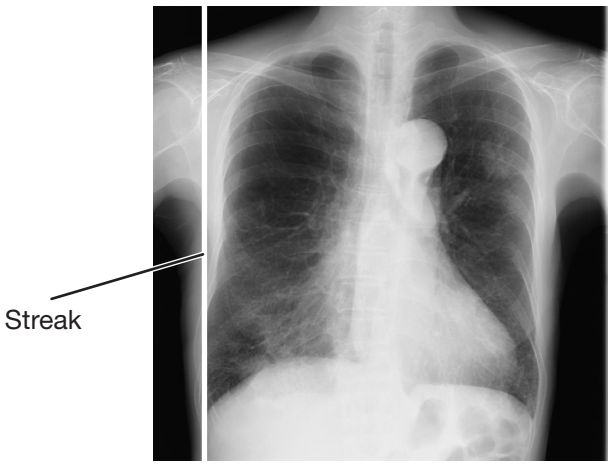
| Error code | Message title | Description | Corrective action |
|---|---|---|---|
| 11904 | **Worn erasure lamp & filter** | Lamp filter is worn and needs replacing as soon as possible. | Contact your local authorized distributor. |
| 11905 | **Worn pump** | Pump is worn and needs replacing as soon as possible. | Contact your local authorized distributor. |
| 11907 | **Maintenance data saving failure** | Information for maintenance checkup purposes cannot be collected. | Start up the console that is connected to the FCR CARBON X/XL. |
| 11960 | **Over X-ray. Poor erasure** | Image on IP has not been erased completely (because of an excessive amount of X-rays). | Press “ReErase.” Note that it takes a lot of time to achieve erasure. If you want to perform erasure later on, press “Eject.” |
| 11970 | **Unprocessed IP** | There is a possibility that image still remains on the IP. | Press “Eject.” Remove the cassette, insert it again, and then erase the image. |
| 11971 | **Unerased IP** | There is a possibility that image still remains on the IP. | Press “Eject.” Remove the cassette, insert it again, and then erase the image. |
| 10xxx* | **SysDown** | Since an error has occurred, the system will be shut down. | Turn OFF the main power switch, and start again. |
| 11908 11909 | **Read sensitivity low** | Equipment sensitivity needs to be adjusted. | Contact your local authorized distributor. |
| — | **Connection failure** | Cannot connect with Console | Check the conditions of the Console, connections cables, and hub. |
| — | **Disconnected** | Disconnected from Console | Check the conditions of the Console, connections cables, and hub. |
| — | **Can’t power off** | Cannot turn off power because of ongoing processing. | Wait until processing is complete, and then perform termination procedure. |

* The xxx portion varies depending on the error encountered.

# 5.5 When Image Is Streaked

**This section provides an example of a streaked image scanned with the FCR CARBON X/XL and an explanation of how to fix the streaking problem.**

If there is soil on the scanner, an IP or both of them, a scanned image may be streaked as shown below.




Note that the streak on this example is enhanced for the sake of clarity.

## ■ Remedial method

- **Scanner cleaning**
  Perform the cleaning of the scanner using the Utility.
  For how to clean the scanner, see the applicable section in Chapter 4.

- **Clean the IP.**
  Wipe the surface of the IP with a soft, dry cloth.
  If the soil fails to come off by dry wiping, wipe the surface using a small amount of dehydrated ethanol.
  Completely dry the IP surface before use.

**CAUTION**

- **Exercise due caution not to damage IPs.**
- **Never use plastic erasers and other solvents.**
- **Do not dig your finger nails into IP surfaces.**
- **Pay due attention not to use a large amount of dehydrated ethanol or clean the IP too frequently, otherwise the IP edges may turn yellowish.**

For IP cleaning, refer to "**B.2 Handling, Daily Care, and Storage of IPs**."

# Chapter 6

# Care and Maintenance


Pages

6.1 About Performing Daily Checks and Maintenance ____ 6-2
6.2 Cleaning the Cassette Set Unit ____ 6-3
6.3 Cleaning the Air Intakes and Exhaust Ports ____ 6-4
6.4 Users Checksheet ____ 6-5

# 6.1 About Performing Daily Checks and Maintenance

**In order to use the FCR CARBON X/XL always in good working order, perform daily checks and maintenance on it.**

As for the daily checks, make certain that the FCR CARBON X/XL starts up normally and all equipment that is connected to the FCR CARBON X/XL can communicate normally with the FCR CARBON X/XL.
For daily care, clean the cassette set unit and air intakes and exhaust ports everyday.

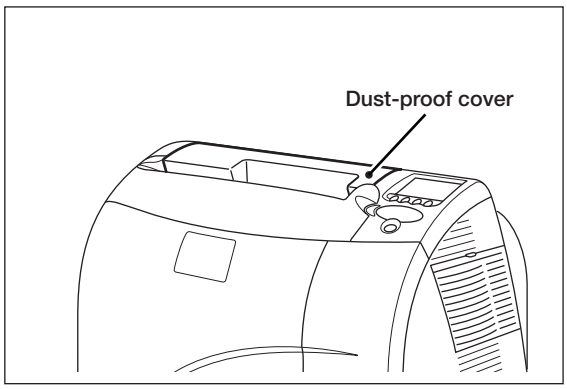
Use the “Users Checksheet” when performing daily checks and maintenance. Enter the following items of information into the “Users Checksheet”:

- Checkups : Enter the date checks were performed.
- S value confirmation : Enter the date the S value was checked.
- Cassette set unit : Enter the date the cassette set unit was cleaned.
- Air intakes and exhaust ports : Enter the date the air intakes and exhaust ports were replaced.

# 6.2 Cleaning the Cassette Set Unit

Perform cleaning, taking care not to let dust into the FCR CARBON X/XL.

**1** Clean the dust-proof cover with a soft cloth moistened with water or the like.




**CAUTION**

Do not use chemicals such as alcohol and paint thinner since they may cause deformation of the dust cover.

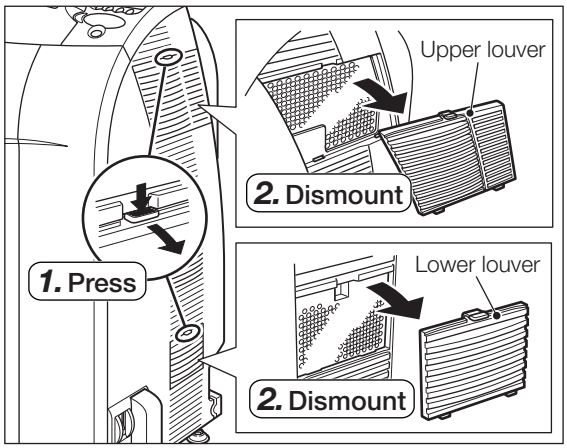
**CAUTION**

When cleaning, be careful not to get your fingers pinched by the dust-proof cover.

# 6.3 Cleaning the Air Intakes and Exhaust Ports

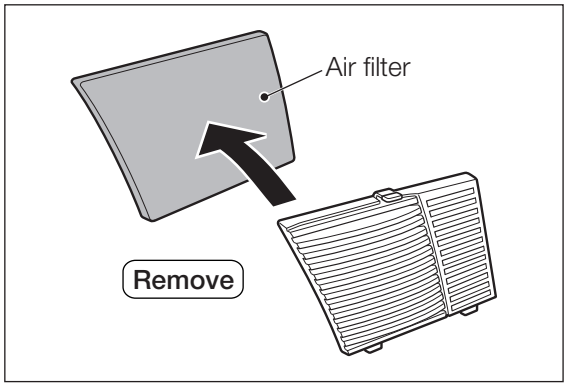
**Clean air filter, louvers and air intakes of the right-side cover and the exhaust ports of the left-side cover periodically (once every three months).**

**1** **Press the button on the top of the louver of the right side (air intake) (*1.*) and dismount the louver (*2.*).**



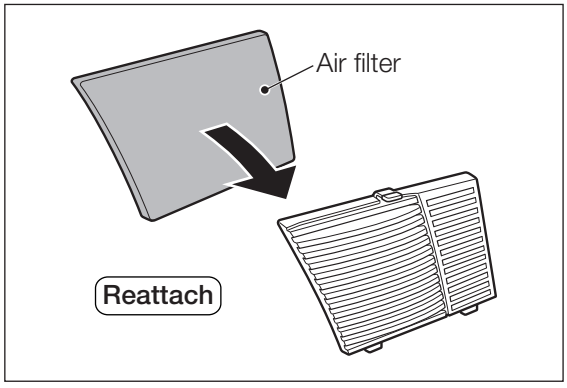

**2** **Remove air filter attached to the inside of the upper louver.**

No air filter is attached to the inside of the lower louver.

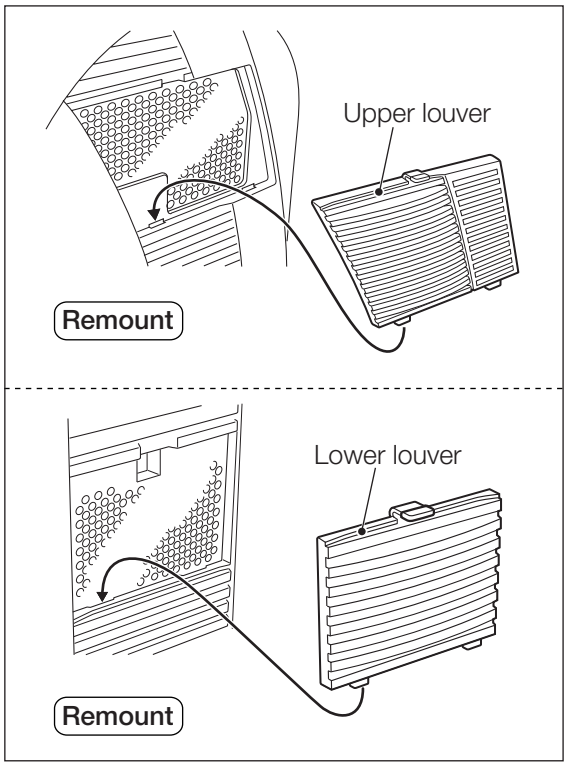



**3** **Use a vacuum cleaner to clean the front and back of the air filter, louvers and air intakes.**

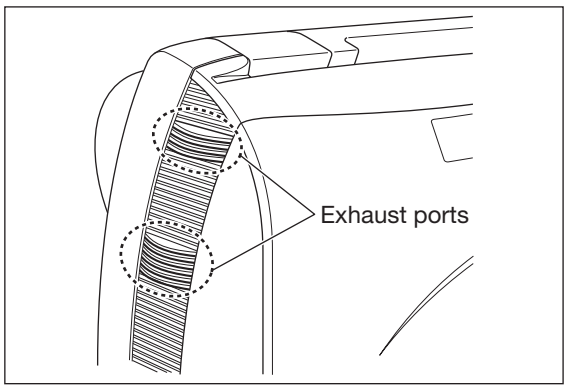
**4** **Reattach the air filter to the upper louver.**




**5** **Remount the louvers on the equipment.**




**6** **Use a vacuum cleaner to clean the exhaust ports of the left side.**




**⚠CAUTION**

**When remounting the louver, be careful not to pinch your fingers.**

# 6.4 Users Checksheet

**We recommend that you periodically check the following so that you can optimally operate the equipment constantly. Make a copy when you are using this checksheet.**

● **Verification**

| Details | Frequency | Date of verification |
|---|---|---|
| Does the equipment start up normally? | Daily | ／<br>／<br>／<br>／<br>／ |
| Is the communication possible normally with the connected equipment? | Daily | ／<br>／<br>／<br>／<br>／ |
| Does the S value remain constant? | Every six months | ／ |

● **Cleaning**

| Unit for cleaning | Frequency | Date of cleaning |
|---|---|---|
| Cassette set unit | Every three months | ／<br>／<br>／<br>／<br>／ |
| Air intakes and exhaust ports | Every three months | ／<br>／<br>／<br>／<br>／ |

# Appendix A

# Specifications


Pages

**A.1 Specifications** — **A-2**

A.1.1 Details of Equipment Specifications — **A-2**

A.1.2 Operating Performance — **A-3**

<FCR CARBON X (CR-IR 357)>

(1) Processing capacity — **A-3**

(2) Time required for monitor image display — **A-3**

(3) Time required for generating film prints — **A-3**

(4) Required specifications and other — **A-3**

<FCR CARBON XL (CR-IR 356)>

(1) Processing capacity — **A-4**

(2) Time required for monitor image display — **A-4**

(3) Time required for generating film prints — **A-4**

(4) Required specifications and other — **A-5**

A.1.3 Applicable Safety Standard — **A-5**

**A.2 External View and Weight** — **A-6**


A

# A.1 Specifications

## A.1.1 Details of Equipment Specifications

**Standard Components**
FCR CARBON X/XL (CR-IR 357/CR-IR 356)

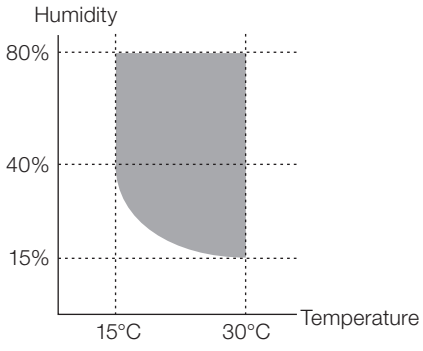
**Power Supply Conditions**

| | | | |
|---|---|---|---|
| Input voltage | AC 100-240V | Rated current | : 5A |
| Frequency | : 50-60Hz | Allowable variations in voltage | : ±10% |
| Phase | : Single | | |

**Environmental Conditions**

**(1) Operating conditions**
Temperature : 15 ˚C (40%) - 30 ˚C (80%)
Humidity : 15%RH (30 ˚C) - 80%RH (30 ˚C)
(no dew condensation)
Atmospheric pressure : 750-1060hPa

**(2) Non-operating conditions**
Temperature : 0 ˚C - 45 ˚C (no freeze condensation)
Humidity : 10%RH - 90%RH (no dew condensation)
Atmospheric pressure : 750-1060hPa




**Available IP/Cassette**

**(1) FujiFilm IP**
Used for ST-VI and ST-VN
14"×17" (35×43cm), 14"×14" (35×35cm), 10"×12" (25.2×30.3cm), 8"×10" (20.1×25.2cm), 24×30cm, 18×24cm, 15×30cm

**(2) Cassette**
FujiFilm IP Cassette CC (ST type cassette)
14"×17" (35×43cm), 14"×14" (35×35cm), 10"×12" (25.2×30.3cm), 8"×10" (20.1×25.2cm), 24×30cm, 18×24cm, 15×30cm

FujiFilm IP Cassette LC (for long-view exposure)
14"×17" (double), 14"×17" (triple), 10"×12" (double), 14"×14" (triple), 24×30cm (double)

* It is not allowed to use both the inch size and metric size at the same time. Select either at installation. The 15×30cm cassette can be used in both sizes.

**Options**
Table, metal fixture kit for preventing the equipment from being toppled over, and cassette pocket.

## A.1.2 Operating Performance

FCR CARBON X (CR-IR 357)

### (1) Processing capacity

| IP size / Processing type | 14"×17" | 14"×14" | 10"×12" | 8"×10" | 24×30cm | 18×24cm | 15×30cm |
|---|---|---|---|---|---|---|---|
| Throughput (Unit : Min. number of processable IPs/hr.) | 43 | 50 | 54 | 67 | 54 | 72 | 55 |
| Feed/load time (Unit : Max. time in seconds) | 82 | 72 | 66 | 53 | 66 | 50 | 65 |

- If the maximum dose applied on the IP exceeds 40mR (1 [mR] ≈ 8.7 [μGy]), the cycle time increases as the X-ray dose increases.
- The time required for changing the cassette is assumed 0 seconds.
- The erasure time is based on 25mR of X-ray dose (1 [mR] ≈ 8.7 [μGy]) applied at exposures.
- The ST-VI type IP is used (the erasure time is extended for the ST-VN type IP).

### (2) Time required for monitor image display

Time required for an image to be displayed on the monitor after the cassette has been inserted.

(Unit : Max. time in seconds)

| Time required for monitor image display (for each image reading size) / Monitor | 14"×17" | 14"×14" | 10"×12" | 8"×10" | 24×30cm | 18×24cm | 15×30cm |
|---|---|---|---|---|---|---|---|
| CR Console (Lite) | 52 | 46 | 41 | 33 | 41 | 31 | 41 |

### (3) Time required for generating film prints

(Unit: Max. time in seconds)

| Printer (printout on a 14"×17" film) / Console | DRYPIX 7000 | | DRYPIX 4000 | |
|---|---|---|---|---|
| | 14"×17" IP | 14"×14" IP | 14"×17" IP | 14"×14" IP |
| CR Console (Lite) | 135 | 130 | 155 | 145 |

* For one-image printout.

### (4) Required specifications and other

Basic performance

Noise (DQE) : Should be within the range specified below.
Between 19.8% and 11.6% (258nC/kg of X-rays) at 1cy/mm.
* The guaranteed value or initial center value for the equipment's six-year of effective life time is 17.0%.

Sharpness (MTF) : Should be within the range specified below.
Between 66.2% and 54.2% at 1cy/mm.
* The guaranteed value or initial center value for the equipment's six-year of effective life time is 60.0%.

Artifact : No unevenness that may affect diagnosis is allowed.

FCR CARBON XL (CR-IR 356)

## (1) Processing capacity

| Processing type \ IP size | | 14"×17" | 14"×14" | 10"×12" | 8"×10" | 24×30cm | 18×24cm | 15×30cm |
|---|---|---|---|---|---|---|---|---|
| Throughput | Standard mode (Unit : Min. number of processable IPs/hr.) | 62 | 70 | 73 | 87 | 75 | 92 | 73 |
| | High-speed mode (Unit : Min. number of processable IPs/hr.) | 87 | 94 | – | – | – | – | – |
| Feed/ load time | Standard mode (Unit: Max. time in seconds) | 58 | 52 | 49 | 41 | 48 | 39 | 49 |
| | High-speed mode (Unit: Max. time in seconds) | 41 | 38 | – | – | – | – | – |

- If the maximum dose applied on the IP exceeds 40mR (1 [mR] ≈ 8.7 [µGy]), the cycle time increases as the X-ray dose increases.
- The time required for changing the cassette is assumed 0 seconds.
- The erasure time is based on 25mR of X-ray dose (1 [mR] ≈ 8.7 [µGy]) applied at exposures.
- The ST-VI type IP is used (the erasure time is extended for the ST-VN type IP).
- To select high-speed mode, set it on the Console connected to the Image Reader.
  The following IP sizes can be read in high-speed mode.
  - 14”x17”
  - 14”x14”

  Note, however, that depending on the connected Console, it is not possible to set high-speed mode. For details of mode settings, refer to the Operation Manual that describes the User Utility functions of the connected Console.

## (2) Time required for monitor image display

The time required for an image to be displayed on the monitor after the cassette has been inserted.

(Unit: Max. time in seconds)

| Monitor \ Time required for monitor image display (for each image reading size) | | 14"×17" | 14"×14" | 10"×12" | 8"×10" | 24×30cm | 18×24cm | 15×30cm |
|---|---|---|---|---|---|---|---|---|
| CR Console | Standard mode | 42 | 37 | 34 | 28 | 34 | 26 | 33 |
| | High-speed mode | 26 | 23 | – | – | – | – | – |

## (3) Time required for generating film prints

(Unit: Max. time in seconds)

| Console \ Printer (printout on a 14"×17" film) | | DRYPIX 7000 | | DRYPIX 4000 | |
|---|---|---|---|---|---|
| | | 14"×17" IP | 14"×14" IP | 14"×17" IP | 14"×14" IP |
| CR Console | Standard mode | 125 | 120 | 145 | 135 |
| | High-speed mode | 100 | 95 | 115 | 110 |

* For one-image printout.

### (4) Required specifications and other

Basic requirement for the CR

Noise (DQE) : Should be within the range specified below.

Standard mode : Between 19.8% and 11.6% at 1cy/mm (258nC/kg of X-rays)

* The guaranteed initial center value is 17.0% for the six years of the equipment's effective life time.

High-speed mode : Between 17.3% and 10.4% at 1cy/mm (258nC/kg of X-rays)

* The guaranteed initial center value is 15.0% for the six years of the equipment's effective life time.

Sharpness (MTF) : Should be within the range specified below.

Both standard and high-speed modes : Between 66.2% and 54.2% at 1cy/mm (825.6nC/kg of X-rays)

* The guaranteed initial center value is 60.0% for the six years of the equipment's effective life time.

Artifact : Should be free of image unevenness that may affect the diagnosis.

## A.1.3 Applicable Safety Standard

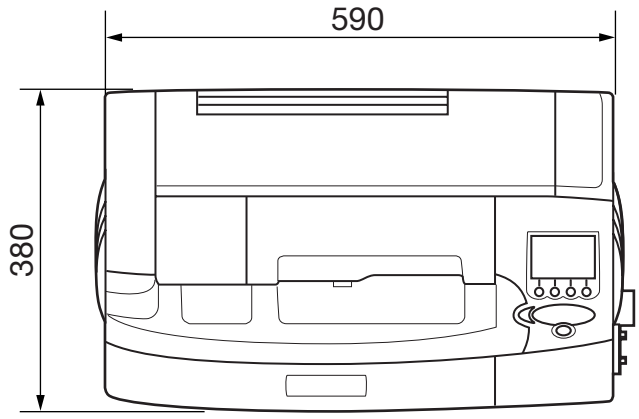
| Number/year of the standard | Title |
|---|---|
| IEC 60825-1<br>Ed. 1. 2 : 2001 | Safety of laser products - Part 1 : Equipment classification, requirements and user's guide |
| EN 60825-1<br>Ed. 1. 2 : 2002 | Safety of laser products - Part 1 : Equipment classification, requirements and user's guide |

# A.2 External View and Weight

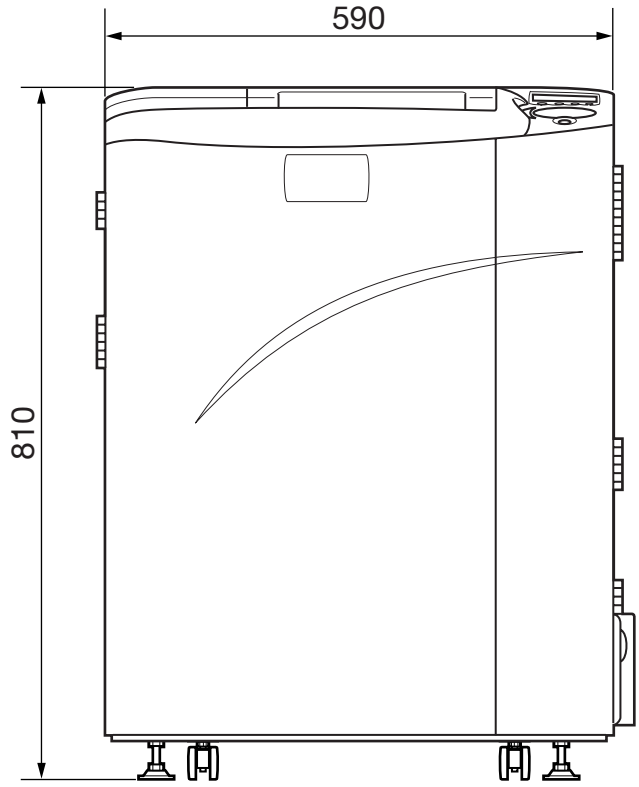
| Model Name | Width (mm) | Depth (mm) | Height (mm) | Weight (kg) |
|---|---|---|---|---|
| FCR CARBON X/XL (CR-IR 357/ CR- IR 356) | 590 | 380 | 810 | 99 |

* Dimensions: Projections are not included.

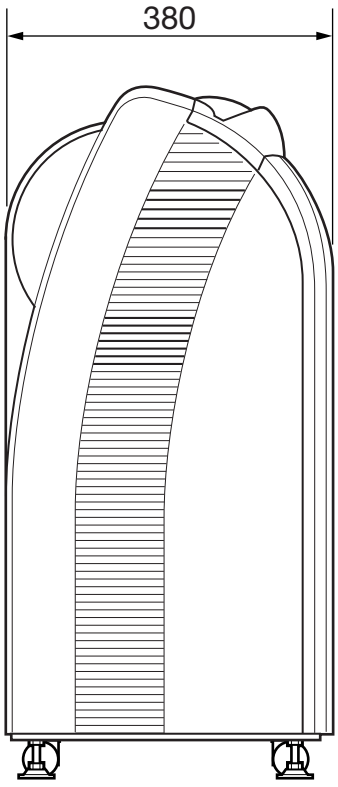
(Unit : mm)




<Top view>




<Front view>




<Left-side view>

Specifications, external dimensions and weight are subject to change for improvement without prior notice.

# Appendix B

# IP Handling


Pages

1. IP Image Erasure Operation ____ B-2
2. Handling, Daily Care, and Storage of IPs ____ B-3


B

# 1. IP Image Erasure Operation

In the event of a failed exposure or when an IP is going to be used for the first time on a given day, it is necessary to erase any image remaining on the IP before use. To erase images, perform either secondary (simple) erasure or primary erasure.

For details of image erasure, see “3.1 Before Use.”

## Secondary erasure (Simple erasure)

If an IP that is going to be used for radiographing work has not been used yet on the day, it is necessary to perform simple (secondary) erasure on that IP.
The objective of the simple erasure is to dissipate any excess energy the IP has accumulated in preparation for radiographic exposure. Even when the IP is stored in a room, it absorbs and accumulates natural radiation such as cosmic rays and radiation energy emanating from radioisotopes contained in construction materials such as those used for floors and walls. If such an energy-loaded IP is used as-is, image degradation may result.

## Primary erasure

Over-exposed and incorrectly exposed IPs should always be subjected to primary erasure before use.

# 2. Handling, Daily Care, and Storage of IPs

This section provides descriptions of important notes about the storage and daily handling of IPs and methods by which to clean them.

## Storage conditions

- Store IPs under the following environmental conditions:
  Unopened : 35°C max.
  Opened : 33°C max., 80% RH
- IPs should be stored out of direct sunlight, ultraviolet rays, and various kinds of radiation.
- Do not bend or fold IPs, and do not apply strong force to them.

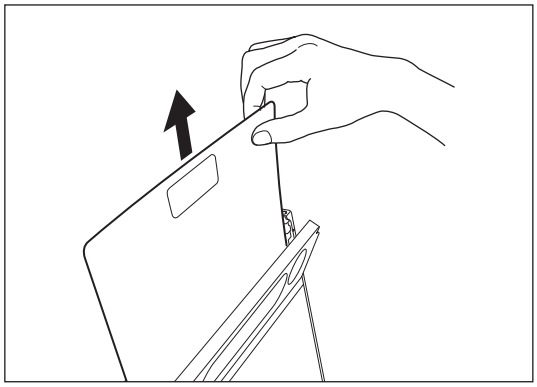
## Everyday handling

- Do not use an IP bearing a flaw(s) which can interfere with diagnostic assessment.
- Handle IPs as gently and carefully as possible, taking care not to scratch and soil them.
- Do not bend IPs in small radii. Do not bump them against other objects. Do not drop them onto the floor or the top of a table.

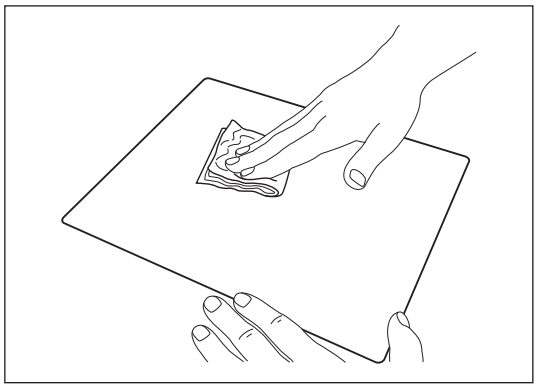
## Cleaning methods

- Items to have ready
  IPs should be cleaned using limited-linting dry cloth. Use any of the following kinds of cloth:
  Non-woven cotton cloth
  Gauze (100% cotton)
  Lens cleaning cloth

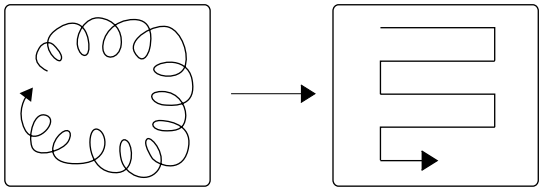
**1** Remove the IP from the cassette.



**2** Clean the IP as follows.



Using any of the above dry cloths, wipe the IP surface in the following patterns, A and B, in order:



A B

## If there is soil that cannot be removed by dry wiping

**1** If soil cannot be removed by dry wiping, moisten the cloth lightly with dehydrated ethanol. (Never use any other cleaning solvent.)

**CAUTION**

When dehydrated ethanol is frequently used for cleaning the IP, the edges of the IP may yellow.

**2** After wet wiping, lightly wipe the IP with a soft dry cloth. The IP should be dried completely before use.

[NOTES]
- Exercise due caution not to damage IPs.
- Never use plastic erasers and other solvents.
- Do not dig your finger nails into IP surfaces.

**CAUTION**

Never expose an IP to light, which has been exposed but not scanned yet.

# Appendix C

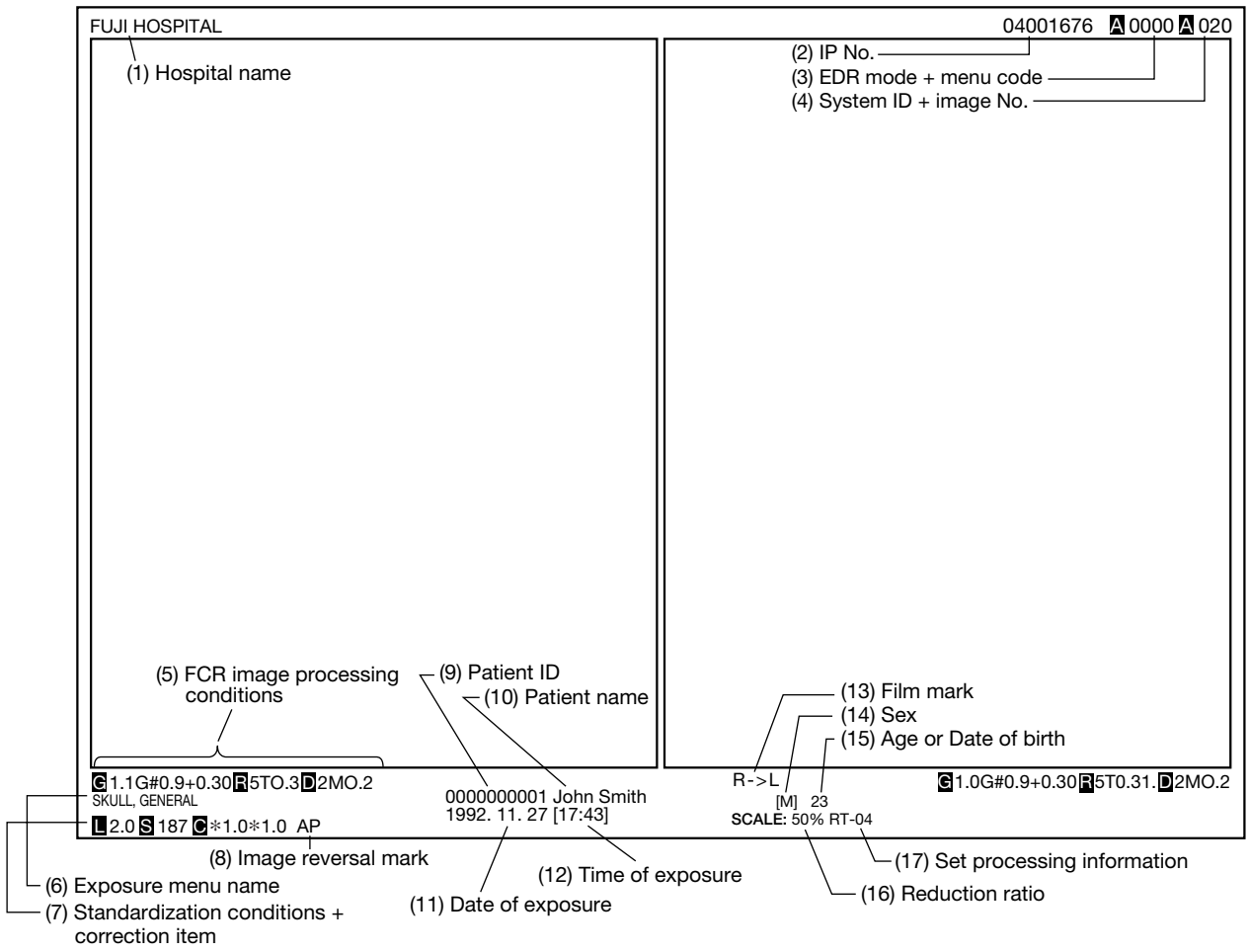
# About Text Information Printed on Film

# About Text Information Printed on Film

**This section provides a description of information to be printed on film.**

## In the case of the two-image format

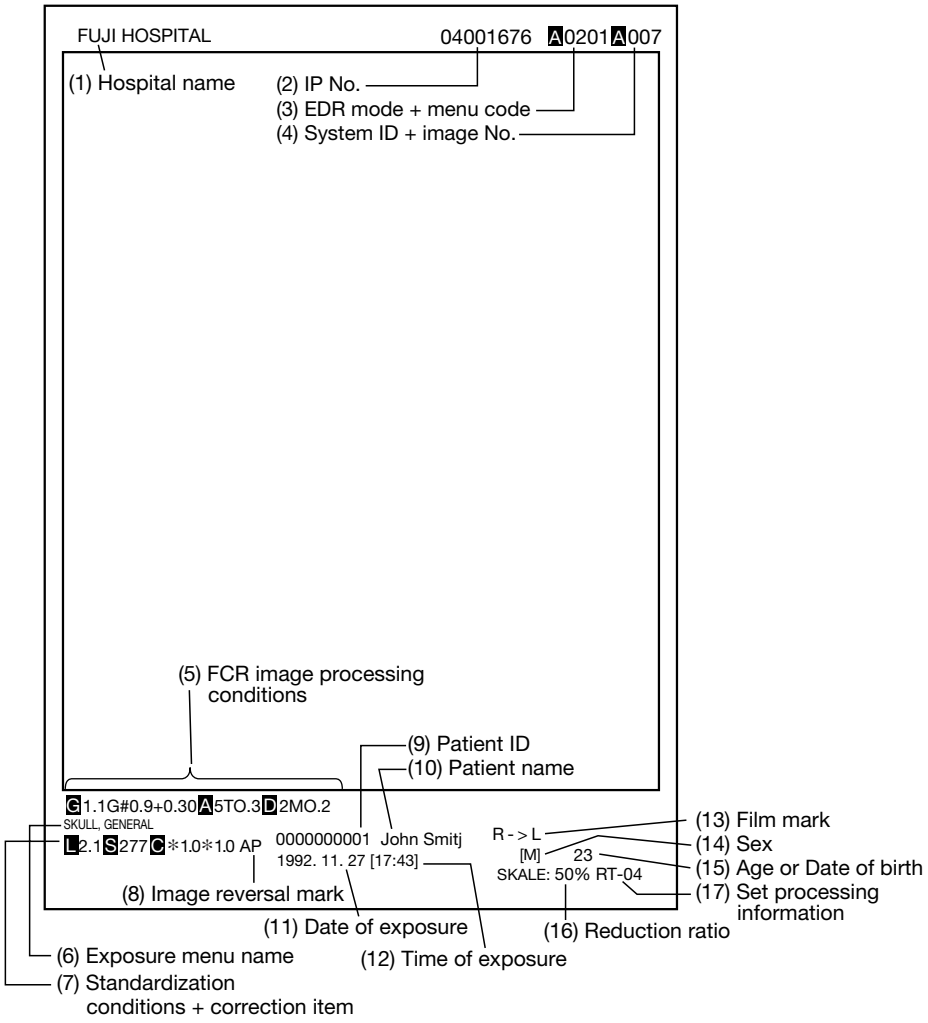
Shown below are an example of annotation printing in the two-image format and the meanings of the on-film annotations:



| | Item | Description |
|---|---|---|
| (1) | Hospital name | The name of the hospital where the exposure was made is displayed. |
| (2) | IP No. | The barcode No. of the IP is displayed. |
| (3) | EDR mode + menu code | The EDR mode and the menu code are displayed. (* In the Standard Film Annotation, only the menu code is displayed.) |
| (4) | System ID + image No. | System ID: An image reader-specific ID code which is one of the characters A to Z and is displayed in reverse video. Image No. : A 3-digit consecutive ordinal number at which the image was scanned on the day is displayed. |
| (5) | FCR image processing conditions | Exposure menu-specific exposure conditions are displayed. |
| (6) | Exposure menu name | The name of the menu under which the exposure was made is displayed. |
| (7) | Standardization conditions + correction item | Latitude (L) and sensitivity (S) value data are displayed along with correction information (C). |
| (8) | Image reversal mark | Displayed when the image is reversed. |
| (9) | Patient ID | The ID of the patient exposed is displayed |
| (10) | Patient name | The name of the patient exposed is displayed. |
| (11) | Date of exposure | The date the exposure was made is displayed. |
| (12) | Time of exposure | The time of the day when the IP was registered is displayed. |
| (13) | Film mark | The orientation in which the exposure was made is displayed. |
| (14) | Sex | The sex of the patient exposed is displayed. |
| (15) | Age or Date of birth | The age of the patient when the exposure was made or his/her birth date is displayed. |
| (16) | Reduction ratio | The image's reduction ratio, from the life size on down, is displayed. |
| (17) | Set processing information | The image's batch processing information is displayed. |

## In the case of the one-image format

Shown below are an example of annotation printing in the one-image format and the meanings of the on-film annotations:



| | Item | Description |
|---|---|---|
| (1) | Hospital name | The name of the hospital where the exposure was made is displayed. |
| (2) | IP No. | The barcode No. of the IP is displayed. |
| (3) | EDR mode + menu code | The EDR mode and the menu code are displayed.<br>(* In the Standard Film Annotation, only the menu code is displayed.) |
| (4) | System ID + image No. | System ID: An image reader-specific ID code which is one of the characters A to Z and is displayed in reverse video.<br>Image No. : A 3-digit consecutive ordinal number at which the image was scanned on the day is displayed. |
| (5) | FCR image processing conditions | Exposure menu-specific exposure conditions are displayed. |
| (6) | Exposure menu name | The name of the menu under which the exposure was made is displayed. |
| (7) | Standardization conditions + correction item | Latitude (L) and sensitivity (S) value data are displayed along with correction information (C). |
| (8) | Image reversal mark | Displayed when the image is reversed. |
| (9) | Patient ID | The ID of the patient exposed is displayed |
| (10) | Patient name | The name of the patient exposed is displayed. |
| (11) | Date of exposure | The date the exposure was made is displayed. |
| (12) | Time of exposure | The time of the day when the IP was registered is displayed. |
| (13) | Film mark | The orientation in which the exposure was made is displayed. |
| (14) | Sex | The sex of the patient exposed is displayed. |
| (15) | Age or Date of birth | The age of the patient when the exposure was made or his/her birth date is displayed. |
| (16) | Reduction ratio | The image's reduction ratio, from the life size on down, is displayed. |
| (17) | Set processing information | The image's batch processing information is displayed. |

# Appndix Y

# Image Processing Parameters


Pages

YI Exposed Anatomical Regions/
Applicable Menus/Display Parameters ——— YI-1

YIV Flexible Noise Control Software Parameters ——— YIV-1


Y

# Appendix YI

# Exposed Anatomical Regions/ Applicable Menus/Display Parameters

## [ Head 1 ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| Plain | 1 | 0000 | SKULL, AP/PA (PA) | Observation of the entire skull and facial bone, entire cerebral ventricles and paranasal sinus, and gnathic joint and Turkish saddle by the Towne projection and Caldwell method | |
| | 1 | 0001 | SINUS, WATERÕS/CALD (PA) | Observation of the nasal cavity and its surroundings by the Waters method | |
| | 1 | 0002 | MANDIBLE, OBLIQUE (AP) | Observation of the mandible | |
| | 1 | 0003 | ORBIT (AP) | Observation of the orbit and optic canal | |
| | 1 | 0004 | HEAD, SOFT TISSUE (PA) | Observation of the cephalic soft part and mastoid process | |
| | 1 | 0006 | SKULL, PEDIATRICS (PA) | Observation of the entire skull of infants (3 or less years of age) | |
| | 1 | 000B | MASTOIDS (AP) | Observation of the ear by the Sch er method, Sonnenkalb position, Stenvers projection, Meyer method, and other methods | |
| | 1 | 000C | SKULL, S.M.V. (AP) | Cephalic exposure by axial projection | |
| | 1 | 000D | CEPHALOGRAPHY (AP) | Routine cephalic exposure | |
| | 1 | 000E | ZYGOMATIC ARCHES (AP) | Exposure of the lateral portion of the zygomatic bone | |
| | 1 | 001E | NASAL BONES, LAT. (AP) | Exposure of the lateral portion of the nasal bone | |
| | 1 | 0010 | SKULL, LATERAL (PA) | Observation of the entire skull and facial bone, entire cerebral ventricles and paranasal sinus, and gnathic joint and Turkish saddle by the Towne projection and Caldwell method | |
| | 1 | 0011 | SINUS, LATERAL (PA) | Observation of the nasal cavity and its surroundings by the Waters method | |
| | 1 | 0020 | SKULL, TOWNS (PA) | Observation of the entire skull by the Towne projection | |
| | 1 | 0021 | FACIAL BONES (PA) | Observation of the facial bones. | |
| | 1 | 0031 | FACIAL BONES, LAT. (PA) | Observation of the facial bones. | |
| | 1 | 0041 | PRE-MRI ORBITS (PA) | | |
| Contrast | 1 | 1000 | HEAD, BL. VESSEL :C (AP) | Cephalic blood vessel exposure with a contrast medium | |
| | 1 | 1002 | PARANASAL SINUS :C (AP) | Exposure with a contrast medium of the paranasal sinuses, the rhinopharynx and oropharynx, and the nasal cavity and nasolacrimal duct | |
| | 1 | 1004 | SALIVARY GLANDS :C (AP) | Parotic, sublingual, and sublingual gland exposure with a contrast medium | |
| Tomography | 1 | 2000 | PARANASAL SINUS :T (AP) | Tomography of paranasal sinus | |
| | 1 | 2001 | EAR :T (PA) | Tomography of inner and middle ear | |
| | 1 | 2002 | SELLA TURCICA :T (PA) | Tomography of turkish saddle | |
| | 1 | 2003 | MANDIBULAR JOINTT :T (AP) | Tomography of gnathic joint and mandible | |

| EDR mode | | | | | | Display Parameter | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | Fix | | Preset mode | Two-image Display | | | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | | Right Image | | | | | | | One-image Display | | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.7 | 0.5 | 5 | Q | 0.5 | 1.0 | A | 0.7 | 0.2 | 5 | Q | 7.0 | 1.0 | G | 0.7 | 0.5 | 5 | Q | 0.5 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.7 | 0.3 | 4 | T | 0.5 | 0.9 | A | 0.6 | 0.0 | 4 | T | 5.0 | 1.2 | G | 0.9 | 0.3 | 4 | T | 0.5 |
| 4S | II | II | 2.2 | 200 | A | 1.0 | F | 0.9 | -0.1 | 5 | T | 0.5 | 0.9 | A | 0.9 | -0.2 | 5 | T | 5.0 | 1.0 | F | 0.9 | -0.1 | 5 | T | 0.5 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.9 | 0.3 | 4 | T | 0.5 | 0.9 | A | 0.8 | 0.0 | 4 | T | 5.0 | 1.2 | G | 0.9 | 0.3 | 4 | T | 0.5 |
| - | IV | II | 2.6 | 200 | A | 1.0 | G | 2.0 | -0.5 | 2 | Q | 0.5 | 1.0 | A | 2.1 | -0.3 | 2 | Q | 3.0 | 1.0 | G | 2.0 | -0.5 | 2 | Q | 0.5 |
| 4S | I | III | 2.2 | 200 | A | 1.2 | G | 0.7 | 0.4 | 4 | R | 0.3 | 0.9 | A | 0.6 | 0.0 | 4 | R | 3.0 | 1.2 | G | 0.7 | 0.4 | 4 | R | 0.3 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | H | 0.9 | 0.4 | 4 | T | 0.5 | 0.9 | A | 0.7 | 0.1 | 4 | T | 5.0 | 1.0 | H | 0.9 | 0.4 | 4 | T | 1.0 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.7 | 0.4 | 5 | Q | 0.5 | 1.0 | A | 0.7 | 0.1 | 5 | Q | 7.0 | 1.0 | G | 0.7 | 0.4 | 5 | Q | 0.5 |
| 4S | I | II | 2.2 | 200 | S | 0.8 | G | 0.7 | 0.4 | 8 | T | 5.0 | 0.8 | A | 0.7 | -0.1 | 8 | T | 15.0 | 0.8 | G | 0.7 | 0.4 | 8 | T | 5.0 |
| - | IV | II | 2.6 | 200 | A | 1.0 | G | 2.0 | 0.3 | 5 | Q | 0.5 | 1.0 | A | 2.1 | 0.3 | 5 | Q | 6.0 | 1.0 | G | 2.0 | 0.3 | 5 | Q | 0.5 |
| - | IV | II | 2.6 | 200 | A | 1.0 | G | 2.0 | -0.5 | 5 | Q | 0.5 | 1.0 | A | 2.1 | -0.3 | 5 | Q | 6.0 | 1.0 | G | 2.0 | -0.5 | 5 | Q | 0.5 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.7 | 0.5 | 5 | Q | 0.5 | 1.0 | A | 0.7 | 0.2 | 5 | Q | 7.0 | 1.0 | G | 0.7 | 0.5 | 5 | Q | 0.5 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.7 | 0.3 | 4 | T | 0.5 | 0.9 | A | 0.6 | 0.0 | 4 | T | 5.0 | 1.2 | G | 0.9 | 0.3 | 4 | T | 0.5 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.7 | 0.5 | 5 | Q | 0.5 | 1.0 | A | 0.7 | 0.2 | 5 | Q | 7.0 | 1.0 | G | 0.7 | 0.5 | 5 | Q | 0.5 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.7 | 0.3 | 4 | T | 0.5 | 0.9 | A | 0.6 | 0.0 | 4 | T | 5.0 | 1.2 | G | 0.9 | 0.3 | 4 | T | 0.5 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.7 | 0.3 | 4 | T | 0.5 | 0.9 | A | 0.6 | 0.0 | 4 | T | 5.0 | 1.2 | G | 0.9 | 0.3 | 4 | T | 0.5 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.7 | 0.6 | 5 | T | 1.0 | 1.0 | A | 0.5 | 0.1 | 5 | T | 7.0 | 1.0 | G | 0.7 | 0.6 | 5 | T | 1.5 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.7 | 0.5 | 4 | R | 1.0 | 1.0 | A | 0.5 | 0.0 | 4 | R | 7.0 | 1.0 | G | 0.7 | 0.5 | 4 | R | 1.5 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.7 | 0.1 | 5 | R | 1.0 | 1.0 | A | 0.6 | 0.0 | 4 | R | 7.0 | 1.0 | G | 0.7 | 0.1 | 5 | R | 1.5 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | I | 0.9 | 0.5 | 4 | R | 1.0 | 1.0 | A | 0.6 | 0.0 | 4 | R | 7.0 | 1.2 | I | 0.9 | 0.5 | 4 | R | 1.5 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | I | 0.9 | 0.5 | 4 | R | 1.0 | 1.0 | A | 0.6 | 0.0 | 4 | R | 7.0 | 1.2 | I | 0.9 | 0.5 | 4 | R | 1.0 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | I | 0.9 | 0.5 | 4 | R | 1.0 | 1.0 | A | 0.6 | 0.0 | 4 | R | 7.0 | 1.2 | I | 0.9 | 0.5 | 4 | R | 1.0 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | I | 0.9 | 0.5 | 4 | R | 1.0 | 1.0 | A | 0.6 | 0.0 | 4 | R | 7.0 | 1.2 | I | 0.9 | 0.5 | 4 | R | 1.0 |

Gradation Processing
- Rotation Amount (GA)
- Gradation Type (GT)
- Rotation Center (GC)
- Gradation Shifting Amount (GS)

Frequency Processing
- Frequency Rank (RN)
- Enhancing Type (RT)
- Frequency Enhancement (RE)

## [ Head 2 ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| Plain | 2 | 0009 | PANAGRAPHY (PA) | Panagraphy | |
| | 2 | 0016 | SKULL, PED. -1 (PA) | Tomography of the entire skull of infants by low-dose exposure | |
| Tomography | 2 | 2004 | PANTOMO. :T (PA) | Pantomography | |
| Magnification | 2 | 6001 | HEAD, MAG :M (PA) | Magnification and magnification tomography of the inner ear, auditory ossicle, and other organs with 3 or higher power | |

| EDR mode | | | | | | Display Parameter | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | Fix | | Preset mode | Two-image Display | | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | | Right Image | | | | | | | One-image Display | | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE |
| 1 | II | II | 2.0 | 200 | A | 1.2 | G | 0.7 | 0.4 | 7 | X | 0.4 | 1.2 | G | 0.7 | 0.4 | 7 | R | 0.0 | 1.2 | G | 0.7 | 0.4 | 7 | X | 0.4 |
| 4 | I | III | 2.2 | 200 | A | 1.0 | E | 1.2 | 0.0 | 5 | Q | 0.5 | 1.0 | A | 1.3 | 0.0 | 5 | Q | 6.0 | 1.0 | A | 1.2 | 0.0 | 5 | Q | 6.0 |
| 1 | II | II | 2.2 | 200 | A | 1.1 | E | 1.2 | 0.2 | 7 | Q | 0.5 | 1.0 | A | 1.2 | 0.0 | 7 | Q | 3.0 | 1.2 | A | 1.2 | 0.0 | 7 | Q | 6.0 |
| 4 | II | I | 2.2 | 200 | S | 1.2 | I | 0.9 | 0.5 | 3 | R | 1.0 | 1.0 | A | 0.6 | 0.0 | 3 | R | 5.0 | 1.2 | I | 0.9 | 0.5 | 3 | R | 1.0 |

Gradation Processing
- Rotation Amount (GA)
- Gradation Type (GT)
- Rotation Center (GC)
- Gradation Shifting Amount (GS)

Frequency Processing
- Frequency Rank (RN)
- Enhancing Type (RT)
- Frequency Enhancement (RE)

## [ Neck ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| Plain | 1 | 0100 | SOFT TISSUE NECK AP (AP) | Exposure of the whole neck; observation of the neck from the cervical spine to soft parts Observation of the frontal portion of the pharynx and larynx | |
| | 1 | 0101 | C-SPINE, AP/OBL (AP) | Observation of the cervical spine, except through open mouth | For exposure of cervico-thoracic spine, use the 0201 “THORACIC SPINE, FRN” or 0209 “THORACIC SPINE, LAT” menu. |
| | 1 | 0102 | SOFT TISSUE NECK LAT (AP) | Observation of the lateral portion of the hypopharynx, larynx, and trachea, and thyroid gland | For exposure of the frontal portion, use the 0100 “CERVICAL, GENERAL” menu. |
| | 1 | 0104 | C-SPINE, PEDS (AP) | General view of the neck of infants (3 years old or less) | |
| | 1 | 0106 | C-SPINE, ODONTOID (AP) | Observation through the open mouth | |
| | 1 | 0111 | C-SPINE, LAT. (AP) | Observation of the cervical spine | |
| | 1 | 0121 | C-SPINE LAT. FIXED (AP) | Observation of the cervical spine | |
| | 1 | 0131 | SWIMMERS FIXED (AP) | Observation of the cervical spine by SWIMMERS technique | |
| Contrast | 1 | 1100 | CERVIC. BL, VESSEL :C (AP) | Cervical blood vessel exposure with a contrast medium | For tomography of the cervicothoracic spines, use the 2203 “THORA.SPINE, FRN” or 2204 “THORA SPINE, LAT” menu. |
| | 1 | 1101 | PHARYNX/LARYNX :C (AP) | Larynx, hypopharynx, and thyroid gland exposure with a contrast medium | |
| | 1 | 1102 | CERVIC, ESOPHAGUS :C (AP) | Exposure of the neck from the hypopharynx to the upper portion of the esophagus with barium | |
| Tomography | 1 | 2100 | CERVICAL SPINE:T (AP) | Tomography of cervical spine | |
| | 1 | 2102 | PHARYNX/LARYNX :T (AP) | Tomography of the hypopharynx, larynx, and upper portion of the trachea | |
| Plain | 2 | 0105 | LARYNX(<35KV) (AP) | Observation of the lateral portion of the neck with the thyroid gland as the target (exposure of soft parts with an MO bulb at 35 k V or lower) | |
| | 2 | 0114 | CERVIC., PED.-1 (AP) | General view of the neck of infants by low-dose exposure | |
| Contrast | 2 | 1105 | CERVICAL, MYELO. :C (AP) | Cervical spinal canal, extradural space, and intervertebral disc exposure with a contrast medium | |
| | 2 | 1106 | CERVICAL, LYMPHA :C (AP) | Cervical lymphatic duct and lymph node exposure with a contrast medium | |
| | 2 | 1107 | THORA C., MYELO :C (AP) | Thoracic spinal canal and extradural space exposure with a contrast medium | |
| Magni-fication | 2 | 4100 | CERVIC., MAG :M (AP) | 3× or more magnification of the pharynx, larynx, and other organs | |

| EDR mode | | | | | | Display Parameter | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | Fix | | Preset mode | Two-image Display | | | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | | Right Image | | | | | | | One-image Display | | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE |
| 4S | I | II | 2.4 | 200 | A | 0.9 | F | 0.6 | 0.3 | 4 | R | 0.5 | 1.0 | A | 0.7 | 0.1 | 4 | R | 5.0 | 0.9 | F | 0.6 | 0.3 | 4 | R | 0.5 |
| 4S | II | II | 2.4 | 200 | A | 1.1 | F | 0.6 | 0.5 | 5 | P | 0.5 | 1.0 | A | 0.5 | 0.1 | 5 | P | 5.0 | 1.1 | F | 0.6 | 0.5 | 5 | P | 0.5 |
| 4S | I | II | 2.4 | 200 | A | 1.0 | I | 0.6 | 0.3 | 4 | R | 0.5 | 1.0 | A | 0.7 | 0.1 | 4 | R | 5.0 | 1.0 | I | 0.6 | 0.3 | 4 | R | 0.5 |
| 4S | I | III | 2.4 | 200 | A | 1.3 | F | 0.7 | 0.0 | 4 | R | 0.3 | 0.9 | A | 0.6 | 0.0 | 4 | R | 3.0 | 1.3 | F | 0.7 | 0.0 | 4 | R | 0.3 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.7 | 0.5 | 5 | Q | 0.5 | 1.0 | A | 0.7 | 0.2 | 5 | Q | 7.0 | 1.0 | G | 0.7 | 0.5 | 5 | Q | 1.0 |
| 4S | II | II | 2.4 | 200 | A | 1.0 | F | 0.6 | 0.5 | 5 | P | 0.5 | 1.0 | A | 0.5 | 0.1 | 5 | P | 5.0 | 1.0 | F | 0.6 | 0.3 | 5 | P | 0.5 |
| 4S | II | II | 2.4 | 200 | A | 1.0 | F | 0.6 | 0.0 | 5 | P | 0.5 | 1.0 | A | 0.5 | 0.1 | 5 | P | 5.0 | 1.0 | F | 0.6 | 0.0 | 5 | P | 0.5 |
| 4S | II | II | 2.4 | 200 | A | 1.0 | F | 0.6 | 0.0 | 5 | P | 0.5 | 1.0 | A | 0.5 | 0.1 | 5 | P | 5.0 | 1.0 | F | 0.6 | 0.0 | 5 | P | 0.5 |
| 4S | I | II | 2.4 | 200 | A | 1.0 | I | 0.6 | 0.8 | 4 | P | 1.0 | 1.0 | A | 0.5 | 0.3 | 4 | P | 5.0 | 1.0 | I | 0.6 | 0.8 | 4 | P | 1.0 |
| 4S | I | II | 2.4 | 200 | A | 1.0 | I | 0.6 | 0.4 | 4 | R | 1.0 | 1.0 | A | 0.7 | 0.2 | 4 | R | 5.0 | 1.0 | I | 0.6 | 0.4 | 4 | R | 1.0 |
| 4S | II | II | 2.4 | 200 | A | 1.0 | I | 0.6 | 0.4 | 4 | R | 1.0 | 1.0 | A | 0.7 | 0.2 | 4 | R | 5.0 | 1.0 | I | 0.6 | 0.4 | 4 | R | 1.0 |
| 1S | II | II | 2.4 | 200 | A | 1.2 | I | 0.6 | 0.5 | 3 | Q | 1.0 | 1.0 | A | 0.5 | 0.3 | 3 | Q | 5.0 | 1.0 | I | 0.6 | 0.5 | 3 | Q | 1.5 |
| 1S | I | II | 2.6 | 200 | A | 1.2 | I | 0.6 | 0.4 | 3 | Q | 1.0 | 1.0 | A | 0.6 | 0.1 | 3 | Q | 5.0 | 1.0 | I | 0.6 | 0.4 | 3 | Q | 1.5 |
| 4S | I | II | 2.4 | 200 | A | 1.0 | I | 2.0 | -0.2 | 4 | R | 0.5 | 1.0 | A | 0.9 | -0.1 | 4 | R | 5.0 | 1.0 | I | 2.0 | -0.2 | 4 | R | 0.5 |
| 4S | I | III | 2.4 | 200 | A | 1.3 | F | 0.7 | 0.0 | 7 | X | 0.4 | 1.3 | F | 0.7 | 0.0 | 7 | R | 0.0 | 1.3 | F | 0.7 | 0.0 | 7 | X | 0.4 |
| 4S | I | II | 2.4 | 200 | A | 1.0 | F | 0.6 | 0.5 | 5 | P | 1.0 | 1.0 | A | 0.5 | 0.1 | 5 | P | 5.0 | 1.0 | F | 0.6 | 0.5 | 5 | P | 1.0 |
| 4S | I | II | 2.4 | 200 | A | 1.0 | I | 0.6 | 0.5 | 4 | P | 1.0 | 1.0 | A | 0.3 | -0.1 | 4 | P | 5.0 | 1.0 | I | 0.6 | 0.5 | 4 | P | 1.0 |
| 4S | I | II | 2.4 | 200 | A | 1.0 | F | 0.6 | 0.5 | 5 | P | 1.0 | 1.0 | A | 0.5 | 0.1 | 5 | P | 5.0 | 1.0 | F | 0.6 | 0.5 | 5 | P | 1.0 |
| 4 | II | I | 2.4 | 200 | S | 1.0 | I | 2.0 | 0.3 | 3 | R | 1.0 | 1.0 | A | 1.9 | 0.4 | 3 | R | 5.0 | 1.0 | I | 2.0 | 0.3 | 3 | R | 1.0 |

Gradation Processing
- Rotation Amount (GA)
- Gradation Type (GT)
- Rotation Center (GC)
- Gradation Shifting Amount (GS)

Frequency Processing
- Frequency Rank (RN)
- Enhancing Type (RT)
- Frequency Enhancement (RE)

## [ Chest 1 ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| Plain | 1 | 0200 | CHEST, PA (PA) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows | |
| | 1 | 0201 | T-SPINE, AP (AP) | Observation of the thoracic and cervicothoracic spines | For exposure of the thoracolumbar spine, use the 0501 "LUMBAR SPINE" menu and for exposure of the lung, adjust the radiation field as small as double the size of the thoracic spine. |
| | 1 | 0209 | T-SPINE, LAT. (AP) | Observation of the thoracic and cervicothoracic spine (this menu is used only when the enface radiogram is different in density from the oblique radiogram in particular) | For exposure of the cervicothoracic spine, use the 0501 "LUMBAR SPINE" menu. |
| | 1 | 0202 | RIBS, UPPER (AP) | Observation of the superior ribs | |
| | 1 | 0203 | RIBS, LOWER (PA) | Observation of the inferior ribs | |
| | 1 | 0204 | CLAVICLE/AC JNTS (AP) | Observation of the clavicle | |
| | 1 | 0205 | SCAPULA, AP (AP) | Observation of the scapula | |
| | 1 | 0206 | STERNUM, PA/OBL (PA) | Observation of the sternum (manubrium, sternal body, and xiphoid process) | |
| | 1 | 0207 | CHEST, PED (0-3YRS) (AP) | Plain thoracic exposure in infants (3 or less years of age) | |
| | 1 | 020A | STERNUM, LATERAL (AP) | Exposure of thoracic soft parts; observation of the chest wall, axilla, and other sites | |
| | 1 | 020B | SHOULDER (AP) | Observation of the frontal and peripheral soft parts of the shoulder joint | Use a grid. |
| | 1 | 020C | AXILLARY SHOULDER (AP) | Observation of the frontal and peripheral soft parts of the shoulder joint | Use a curve cassette or make an exposure in the caudal direction. |
| | 1 | 020D | WHOLE SPINE/SCOLIO (AP) | Exposure of the whole spine of infants which can be recorded on a 14×17" IP | |
| | 1 | 0212 | RIB, UPPER OBL. (AP) | Observation of the superior ribs oblique | |
| | 1 | 021D | T-SPINE, PEDS (AP) | Observation of the thoracic spines (3 or less years of age) | |
| | 1 | 0227 | CHEST, NEONATE (AP) | | |
| | 1 | 022D | L-SPINE, PEDS (AP) | Observation of the Lumber spines (3 or less years of age) | |
| | 1 | 0237 | CHEST, PED PORT. (AP) | Plain thoracic exposure in infants (3 or less years of age) for portable | |
| | 1 | 0230 | CHEST, LATERAL (PA) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows (this menu is used only when the enface radiogram is different in density from the oblique radiogram in particular) | |
| | 1 | 0240 | CHEST, AP NON-GRID (PA) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows without grid | |
| | 1 | 0250 | CHEST, PORTABLE (PA) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows for portable | |
| | 1 | 0260 | CHEST, DECUB. (PA) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows for decubitus | |
| | 1 | 0270 | CHEST, PED (4-10YRS) (PA) | Plain thoracic exposure in infants (4 to 10 years age) | |
| | 1 | 0280 | CHEST, AP (GRID) (AP) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows with grid | |
| | 1 | 0290 | CHEST, LINE PLCMT (PA) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows | |

| EDR mode | | | | | Preset mode | Display Parameter | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | Fix | | | Two-image Display | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | | Right Image | | | | | | | One-image Display | | | | | | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | | | | |
| 4S | II | IV | 2.2 | 200 | A | 1.0 | E | 1.6 | 0.0 | 4 | R | 0.5 | 0.9 | A | 1.5 | 0.0 | 4 | R | 5.0 | 0.9 | E | 1.6 | 0.0 | 4 | R | 0.5 | | | | |
| 4S | II | II | 2.2 | 200 | A | 1.1 | G | 0.9 | 0.6 | 5 | T | 0.5 | 1.0 | A | 0.7 | 0.2 | 5 | T | 5.0 | 1.1 | G | 0.9 | 0.6 | 5 | T | 0.5 | | | | |
| 4S | VI | II | 2.2 | 200 | A | 1.0 | G | 0.9 | 0.1 | 5 | T | 0.6 | 1.0 | A | 1.0 | 0.0 | 5 | T | 5.0 | 1.0 | G | 0.9 | 0.1 | 5 | T | 0.6 | | | | |
| 4S | II | II | 2.2 | 200 | A | 0.7 | O | 0.8 | -0.1 | 5 | R | 0.5 | 0.9 | A | 1.6 | -0.1 | 5 | R | 5.0 | 0.7 | O | 0.8 | -0.1 | 5 | R | 0.5 | | | | |
| 4S | II | II | 2.2 | 200 | A | 0.7 | O | 0.6 | -0.25 | 5 | R | 0.5 | 1.0 | A | 0.8 | 0.25 | 5 | R | 5.0 | 0.7 | O | 0.6 | 0.25 | 5 | R | 0.5 | | | | |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.6 | 0.1 | 5 | T | 0.5 | 0.9 | A | 0.9 | 0.0 | 5 | T | 5.0 | 1.2 | G | 0.6 | 0.1 | 5 | T | 0.5 | | | | |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.6 | 0.2 | 5 | T | 0.5 | 1.0 | A | 0.7 | 0.0 | 5 | T | 5.0 | 1.2 | G | 0.6 | 0.2 | 5 | T | 0.5 | | | | |
| 4S | II | II | 2.2 | 200 | A | 1.0 | O | 1.6 | 0.0 | 5 | R | 0.5 | 0.9 | A | 1.4 | -0.1 | 5 | R | 7.0 | 1.0 | O | 1.6 | 0.0 | 5 | R | 0.5 | | | | |
| 4S | VI | II | 2.2 | 200 | A | 1.1 | E | 1.6 | -0.3 | 3 | R | 0.0 | 1.0 | A | 1.5 | -0.6 | 3 | R | 1.0 | 1.3 | E | 1.6 | -0.3 | 3 | R | 0.0 | | | | |
| - | IV | II | 2.6 | 200 | A | 1.1 | F | 0.8 | 0.6 | 5 | Q | 1.0 | 0.7 | A | 1.6 | 0.2 | 5 | Q | 7.0 | 1.1 | F | 0.8 | 0.6 | 5 | Q | 1.0 | | | | |
| 4S | VII | II | 2.2 | 200 | A | 1.1 | G | 0.6 | 0.1 | 5 | T | 0.5 | 1.0 | A | 0.9 | 0.0 | 5 | T | 5.0 | 1.1 | G | 0.6 | 0.1 | 5 | T | 0.5 | | | | |
| 4S | VII | II | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.5 | 5 | T | 0.5 | 1.0 | A | 0.6 | 0.2 | 5 | T | 5.0 | 1.0 | O | 0.6 | 0.5 | 5 | T | 0.5 | | | | |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.9 | 0.6 | 5 | T | 0.5 | 1.2 | A | 0.9 | 0.2 | 5 | T | 5.0 | 1.0 | G | 0.9 | 0.6 | 5 | T | 0.5 | | | | |
| 4S | II | II | 2.2 | 200 | A | 0.7 | O | 1.6 | -0.2 | 5 | R | 0.5 | 0.7 | A | 1.6 | -0.1 | 5 | R | 5.0 | 0.7 | O | 1.6 | -0.2 | 5 | R | 0.5 | | | | |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.9 | 0.6 | 5 | T | 0.5 | 1.2 | A | 0.9 | 0.2 | 5 | T | 5.0 | 1.0 | G | 0.9 | 0.6 | 5 | T | 0.5 | | | | |
| 4S | II | II | 2.2 | 200 | A | 1.3 | O | 1.6 | -0.4 | 3 | R | 0.0 | 1.0 | A | 1.5 | -0.6 | 3 | R | 1.0 | 1.3 | O | 1.6 | -0.4 | 3 | R | 0.0 | | | | |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.9 | 0.6 | 5 | T | 0.5 | 1.2 | A | 0.9 | 0.2 | 5 | T | 5.0 | 1.0 | G | 0.9 | 0.6 | 5 | T | 0.5 | | | | |
| 4S | II | II | 2.2 | 200 | A | 1.3 | O | 1.6 | -0.4 | 3 | R | 0.0 | 1.0 | A | 1.5 | -0.6 | 3 | R | 1.0 | 1.3 | O | 1.6 | -0.4 | 3 | R | 0.0 | | | | |
| 4S | II | IV | 2.2 | 200 | A | 1.0 | E | 1.6 | -0.2 | 4 | R | 0.5 | 0.9 | A | 1.5 | -0.2 | 4 | R | 5.0 | 0.8 | E | 1.6 | -0.2 | 4 | R | 0.5 | | | | |
| 4S | II | IV | 2.2 | 200 | A | 0.9 | D | 1.6 | 0.0 | 4 | R | 0.5 | 0.9 | A | 1.5 | 0.0 | 4 | R | 5.0 | 0.9 | D | 1.6 | 0.0 | 4 | R | 0.5 | | | | |
| 4S | II | IV | 2.2 | 200 | A | 1.0 | D | 1.6 | 0.0 | 4 | R | 0.5 | 0.9 | A | 1.5 | 0.0 | 4 | R | 5.0 | 0.9 | D | 1.6 | 0.0 | 4 | R | 0.5 | | | | |
| 4S | II | IV | 2.2 | 200 | A | 1.0 | D | 1.6 | 0.0 | 4 | R | 0.5 | 0.9 | A | 1.5 | 0.0 | 4 | R | 5.0 | 0.9 | D | 1.6 | 0.0 | 4 | R | 0.5 | | | | |
| 4S | II | IV | 2.2 | 200 | A | 0.9 | E | 1.6 | -0.1 | 4 | R | 0.3 | 0.9 | A | 1.5 | -0.2 | 4 | R | 5.0 | 0.9 | E | 1.6 | -0.1 | 4 | R | 0.3 | | | | |
| 4S | II | IV | 2.2 | 200 | A | 0.8 | E | 1.6 | 0.0 | 4 | R | 0.5 | 0.9 | A | 1.5 | 0.0 | 4 | R | 5.0 | 0.8 | E | 1.6 | 0.0 | 4 | R | 0.5 | | | | |
| 4S | II | IV | 2.2 | 200 | A | 0.8 | E | 1.6 | 0.0 | 4 | R | 0.5 | 0.9 | A | 1.5 | 0.0 | 4 | R | 5.0 | 0.8 | E | 1.6 | 0.0 | 4 | R | 0.5 | | | | |

Gradation Processing: Rotation Amount (GA), Gradation Type (GT), Rotation Center (GC), Gradation Shifting Amount (GS)
Frequency Processing: Frequency Rank (RN), Enhancing Type (RT), Frequency Enhancement (RE)

## [ Chest 2 ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| Plain | 1 | 02A0 | CHEST, PA X-WISE (PA) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows | |
| | 1 | 02B0 | CHEST PORT X-WISE (PA) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows | |
| Contrast | 1 | 1200 | CHEST, BL. VESSEL :C (AP) | Thoracic blood vessel exposure with a contrast medium | |
| | 1 | 1201 | BRONCHUS :C (AP) | Bronchial exposure with a contrast medium | |
| | 1 | 1202 | CHEST,ESOPHAGUS :C (AP) | Thoracic esophageal exposure with a contrast medium | |
| Tomography | 1 | 2200 | LUNG :T (AP) | Mainly tomography of the lung field; observation of the lung field and rib | |
| | 1 | 2201 | MEDIASTINUM :T (AP) | Mainly tomography of the mediastinum | |
| | 1 | 2202 | STERNUM :T (AP) | Sternal tomography | |
| | 1 | 2203 | THORA. SPINE, FRN :T (AP) | Thoracic spinal tomography | For tomography of the cervicothoracic spines, use the 2500 “LUMBAR SPINE” menu. |
| | 1 | 2204 | THORA, SPINE, LAT :T (AP) | Thoracic spinal tomography (this menu is used when the enface radiogram is different in density from the oblique radiogram) | For tomography of the cervicothoracic spines, use the 2500 “LUMBAR SPINE” menu. |
| | 1 | 2205 | SHOULDER JOINT :T (AP) | Tomography of the shoulder joint and its periphery brachial region | |
| Plain | 2 | 0210 | CHEST, SPECIAL-1 (PA) | For pneumoconiosis diagnosis | Load the system with the display parameters usually considered appropriate for coniosis staging. |
| | 2 | 0220 | CHEST, SPECIAL-2 (PA) | For mass radiography | Load the system with the display parameter considered fit for screening. |
| | 2 | 0217 | CHEST, PED.-1 (AP) | Low-dose plain thoracic exposure in infants | |
| | 2 | 020E | CHEST, GENERAL-2 (PA) | Observation of a thin shadow in the lung field (infiltrative alveolar shadow) | |
| | 2 | 020F | CHEST, PORTABLE (AP) | Observation of chest for prognosis | |
| | 2 | 0211 | SHOULDER, “Y” VIEW (PA) | Observation of thoracic spine in oblique radiogram | |
| | 2 | 1205 | CHEST, MYELO., FRN :C (AP) | Exposure with a contrast medium of the spinal canal and intervertebral discs of the thoracic spine | |
| Contrast | 2 | 1206 | CHEST, LYMPHA, FRN :C (AP) | Thoracic lymphatic duct and lymph node exposure with a contrast medium | |
| | 2 | 1204 | CHEST, MYELO., LAT :C (AP) | Exposure with a contrast medium of the spinal canal and intervertebral discs of the thoracic spine (this menu is used when the enface radiogram is different in density from the oblique radiogram) | |
| | 2 | 1207 | CHEST, LYMPHA, LAT :C (AP) | Thoracic lymphatic duct and lymph node exposure with a contrast medium (this menu is used when the enface radiogram is different in density from the oblique radiogram) | |
| | 2 | 1208 | SHLD, JNT, ARTHRO :C (AP) | Shoulder joint exposure with a contrast medium | Use a grid. |
| Magni-fication | 2 | 4208 | CHEST, MAG :M (AP) | 3× or more magnification of the lung field, thoracic lymphoduct, and other sites | |

| EDR mode | | | | | | Display Parameter | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | Fix | | Preset mode | Two-image Display | | | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | | Right Image | | | | | | | One-image Display | | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE |
| 4S | II | IV | 2.2 | 200 | A | 1.0 | E | 1.6 | 0.0 | 4 | R | 0.5 | 0.9 | A | 1.5 | 0.0 | 4 | R | 5.0 | 0.9 | E | 1.6 | 0.0 | 4 | R | 0.5 |
| 4S | II | IV | 2.2 | 200 | A | 1.0 | D | 1.6 | 0.0 | 4 | R | 0.5 | 0.9 | A | 1.5 | 0.0 | 4 | R | 5.0 | 0.9 | D | 1.6 | 0.0 | 4 | R | 0.5 |
| 4S | II | IV | 2.2 | 200 | A | 1.0 | E | 1.6 | 0.2 | 5 | T | 1.0 | 0.9 | A | 1.3 | 0.0 | 5 | T | 5.0 | 1.0 | E | 1.6 | 0.2 | 5 | T | 1.0 |
| 4S | II | II | 2.2 | 200 | A | 1.0 | E | 1.6 | 0.0 | 5 | T | 1.0 | 0.9 | A | 1.3 | -0.2 | 5 | T | 5.0 | 1.0 | E | 1.6 | 0.0 | 5 | T | 1.0 |
| 1 | II | II | 2.2 | 200 | A | 1.0 | N | 0.3 | 0.1 | 8 | T | 1.0 | 1.0 | A | 0.7 | 0.0 | 8 | T | 7.0 | 1.0 | N | 0.3 | 0.1 | 8 | T | 1.0 |
| 1 | II | IV | 2.2 | 200 | A | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 0.9 | A | 1.4 | -0.1 | 4 | R | 7.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 |
| 1 | II | II | 2.2 | 200 | A | 1.0 | E | 1.6 | 0.4 | 4 | R | 1.0 | 0.9 | A | 1.3 | 0.1 | 4 | R | 7.0 | 1.0 | E | 1.6 | 0.4 | 4 | R | 1.0 |
| 1 | II | II | 2.2 | 200 | A | 1.0 | E | 1.6 | 0.4 | 4 | R | 1.0 | 0.9 | A | 1.3 | 0.1 | 4 | R | 7.0 | 1.0 | E | 1.6 | 0.4 | 4 | R | 1.0 |
| 1 | II | II | 2.2 | 200 | A | 1.1 | G | 0.9 | 0.6 | 4 | T | 1.0 | 1.0 | A | 0.7 | 0.2 | 4 | T | 7.0 | 1.1 | G | 0.9 | 0.6 | 4 | T | 1.0 |
| 1 | II | II | 2.2 | 200 | A | 1.0 | G | 0.9 | 0.1 | 4 | T | 1.0 | 1.0 | A | 1.0 | 0.0 | 4 | T | 7.0 | 1.0 | G | 0.9 | 0.1 | 4 | T | 1.0 |
| 1 | II | II | 2.2 | 200 | A | 1.0 | O | 0.6 | 0.4 | 3 | T | 1.0 | 1.0 | A | 0.6 | 0.0 | 3 | T | 5.0 | 1.0 | O | 0.6 | 0.4 | 3 | T | 1.0 |
| 4S | II | IV | 2.2 | 200 | A | 1.0 | E | 1.6 | -0.2 | 4 | R | 0.3 | -0.9 | A | 0.5 | -1.15 | 4 | R | 0.5 | 1.1 | E | 1.6 | -0.2 | 4 | R | 0.3 |
| 4S | II | IV | 2.2 | 200 | A | 1.0 | E | 1.6 | -0.2 | 0 | R | 0.5 | 0.9 | A | 1.5 | -0.2 | 0 | R | 3.0 | 0.8 | E | 1.6 | -0.2 | 0 | R | 0.5 |
| 4S | II | II | 2.2 | 200 | A | 1.0 | D | 1.6 | -0.3 | 7 | X | 0.4 | 1.0 | D | 1.6 | -0.3 | 7 | R | 0.0 | 1.0 | D | 1.6 | -0.3 | 7 | X | 0.4 |
| 4S | II | IV | 2.2 | 200 | A | 1.0 | P | 1.6 | 0.0 | 4 | R | 0.2 | 0.9 | A | 1.5 | -0.2 | 4 | R | 5.0 | 1.0 | P | 1.6 | 0.0 | 9 | R | 0.5 |
| - | IV | IV | 2.2 | 200 | A | 1.2 | E | 1.6 | -0.2 | 4 | R | 0.5 | 1.0 | E | 1.6 | -0.3 | 4 | R | 5.0 | 1.2 | E | 1.6 | -0.2 | 4 | R | 0.5 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.9 | 0.2 | 5 | T | 1.0 | 1.0 | A | 0.7 | 0.1 | 5 | T | 7.0 | 1.2 | G | 0.9 | 0.2 | 5 | T | 1.0 |
| 4S | II | II | 2.2 | 200 | A | 1.1 | G | 0.9 | 0.6 | 5 | T | 1.0 | 1.0 | A | 0.7 | 0.2 | 5 | T | 5.0 | 1.1 | G | 0.9 | 0.6 | 5 | T | 1.0 |
| 4S | II | II | 2.2 | 200 | A | 1.1 | G | 0.9 | 0.6 | 5 | T | 1.0 | 1.0 | A | 0.7 | 0.2 | 5 | T | 5.0 | 1.1 | G | 0.9 | 0.6 | 5 | T | 1.0 |
| 4S | II | II | 2.2 | 200 | A | 1.0 | G | 0.9 | 0.1 | 5 | T | 1.0 | 1.0 | A | 1.0 | 0.0 | 5 | T | 5.0 | 1.0 | G | 0.9 | 0.1 | 5 | T | 1.0 |
| 4S | II | II | 2.2 | 200 | A | 1.0 | G | 0.9 | 0.1 | 5 | T | 1.0 | 1.0 | A | 1.0 | 0.0 | 5 | T | 5.0 | 1.0 | G | 0.9 | 0.1 | 5 | T | 1.0 |
| 4S | II | II | 2.2 | 200 | A | 1.2 | G | 0.6 | 0.25 | 5 | T | 1.0 | 1.0 | A | 0.9 | 0.0 | 5 | T | 5.0 | 1.2 | G | 0.6 | 0.25 | 5 | T | 1.0 |
| 4 | II | II | 2.0 | 200 | S | 1.2 | E | 1.6 | -0.2 | 3 | R | 1.0 | 0.9 | A | 1.5 | -0.2 | 3 | R | 5.0 | 1.0 | E | 1.6 | -0.2 | 3 | R | 1.0 |

Gradation Processing: Rotation Amount (GA), Gradation Type (GT), Rotation Center (GC), Gradation Shifting Amount (GS)
Frequency Processing: Frequency Rank (RN), Enhancing Type (RT), Frequency Enhancement (RE)

## [ Abdomen ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| Plain | 1 | 0400 | ABDOMEN, GENERAL (AP) | Plain abdominal exposure; observation of the whole abdomen; thoracicoabdominal exposure | |
| | 1 | 0402 | ABDOMEN, PEDS (AP) | Observation of the abdomen and pelvic part of infants (3 years old or less); thoracicoabdomimal exposure in infants | |
| | 1 | 0403 | ABDOM., SOFT TISS. (AP) | Observation of abdominal soft parts | |
| | 1 | 0410 | ABDOMEN, UPRIGHT (AP) | Plain abdominal exposure; observation of the whole abdomen; thoracicoabdominal exposure with upright | |
| | 1 | 0420 | ABDOMEN, DECUB. (AP) | Plain abdominal exposure; observation of the whole abdomen; thoracicoabdominal exposure for decubitus | |
| | 1 | 0422 | ABDOMEN, PED PRT (AP) | Observation of the abdomen and pelvic part of infants (3 years old or less); thoracicoabdomimal exposure in infants | |
| | 1 | 0430 | ABDOMEN, PORTABLE (AP) | Plain abdominal exposure; observation of the whole abdomen; thoracicoabdominal exposure for portable | |
| | 1 | 0432 | ABDOMEN, NEONATE (AP) | Plain abdominal exposure; observation of the whole abdomen; thoracicoabdominal exposure for neonate | |
| | 1 | 0440 | U.G.I. (AP) | Upper gastric intestine | |
| | 1 | 0442 | PEDIATRIC G.I. (AP) | Upper gastric intestine for pediatrics | |
| | 1 | 0450 | B.E. (AP) | | |
| | 1 | 0460 | S.B.F.T (AP) | | |
| Contrast | 1 | 1400 | ABDOM., BL. VESSEL :C (AP) | Abdominal blood vessel exposure with a contrast medium | |
| | 1 | 1401 | UGI AIR CONTRAST :C (AP) | Gastric exposure with a contrast medium by filling, compression, double-contrast, and relief methods | |
| | 1 | 1402 | BE AIR CONTRAST :C (AP) | Large and small intestine exposure by the barium enema and barium meal methods | |
| | 1 | 1403 | I.V.P. :C (AP) | Venous, intravenous drip type, and retrograde pyelography | |
| | 1 | 1404 | G.B./PANCREATIC DUCT :C (AP) | Venous cholangiography, intravenous drip type cholagiography, oral cholecystography, PTC, and ERCP | |
| Tomography | 1 | 3400 | GALLBLADDER :T (AP) | Visualization tomography of the gallbladder | |
| | 1 | 3401 | KIDNEY TOMO :T (AP) | Visualization tomography of the renal pelvis | |
| Plain | 2 | 0412 | ABDOM., PED. -1 (AP) | Low-dose exposure of the abdomen, pelvic part, and thoracicoabdominal part of infants | |
| Contrast | 2 | 1405 | ABDOMEN, MYELO :C (AP) | Spinal canal and intervertebral disc exposure with a contrast medium | |
| | 2 | 1406 | ABDOMEN, LYMPHA :C (AP) | Abdominal lymphatic duct and lymph node exposure with a contrast medium | |
| Magni-fication | 2 | 5406 | ABDOMEN, MAG :M (AP) | 3× or more magnification of the abdominal lymphatic duct, bones, and other organs | |

| EDR mode | | | | | | Display Parameter | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | Fix | | Preset mode | Two-image Display | | | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | | Right Image | | | | | | | One-image Display | | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE |
| 4S | II | II | 2.0 | 200 | A | 1.1 | D | 0.6 | 0.2 | 3 | Q | 0.5 | 0.9 | A | 0.7 | 0.0 | 3 | Q | 5.0 | 0.9 | D | 1.6 | 0.6 | 3 | Q | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.2 | D | 1.6 | 0.1 | 3 | R | 0.3 | 1.2 | A | 1.6 | 0.25 | 3 | R | 3.0 | 1.2 | D | 1.6 | 0.1 | 3 | R | 0.3 |
| - | IV | II | 2.6 | 200 | A | 1.1 | F | 2.0 | 0.0 | 3 | Q | 1.0 | 0.7 | A | 1.6 | -0.2 | 3 | Q | 7.0 | 1.1 | F | 2.0 | 0.0 | 3 | Q | 1.0 |
| 4S | II | II | 2.0 | 200 | A | 1.1 | D | 0.6 | 0.45 | 3 | Q | 0.5 | 0.9 | A | 0.7 | 0.0 | 3 | Q | 5.0 | 1.1 | D | 1.6 | 0.45 | 3 | Q | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.1 | D | 0.6 | 0.2 | 3 | Q | 0.5 | 0.9 | A | 0.7 | 0.0 | 3 | Q | 5.0 | 0.9 | D | 1.6 | 0.2 | 3 | Q | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.2 | D | 1.6 | 0.1 | 3 | R | 0.0 | 1.2 | A | 1.6 | 0.25 | 3 | R | 3.0 | 1.2 | D | 1.6 | 0.1 | 3 | R | 0.0 |
| 4S | II | II | 2.0 | 200 | A | 1.1 | D | 0.6 | 0.2 | 3 | Q | 0.5 | 0.9 | A | 0.7 | 0.0 | 3 | Q | 5.0 | 0.9 | D | 1.6 | 0.2 | 3 | Q | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.2 | D | 1.6 | 0.15 | 3 | Q | 0.0 | 1.2 | A | 1.6 | 0.25 | 3 | Q | 3.0 | 1.2 | D | 1.6 | 0.15 | 3 | Q | 0.0 |
| 4S | II | II | 2.0 | 200 | A | 1.3 | N | 0.6 | 0.3 | 4 | Q | 0.5 | 0.9 | A | 0.7 | 0.0 | 4 | Q | 5.0 | 1.3 | N | 1.6 | 0.3 | 4 | Q | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 0.9 | D | 1.6 | 0.2 | 3 | Q | 0.5 | 1.2 | A | 1.6 | 0.25 | 3 | Q | 3.0 | 0.9 | D | 1.6 | 0.2 | 3 | Q | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.3 | N | 0.6 | 0.3 | 4 | Q | 0.5 | 0.9 | A | 0.7 | 0.0 | 4 | Q | 5.0 | 1.3 | N | 1.6 | 0.3 | 4 | Q | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.3 | N | 0.6 | 0.3 | 4 | Q | 0.5 | 0.9 | A | 0.7 | 0.0 | 4 | Q | 5.0 | 1.3 | N | 1.6 | 0.3 | 4 | Q | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.1 | D | 0.6 | 0.4 | 5 | T | 1.0 | 0.9 | A | 0.5 | 0.0 | 5 | T | 5.0 | 1.1 | D | 0.6 | 0.4 | 5 | T | 1.0 |
| 1S | III | II | 2.0 | 200 | A | 1.0 | N | 0.3 | 0.3 | 8 | T | 1.0 | 1.0 | A | 0.5 | 0.2 | 8 | T | 7.0 | 1.3 | N | 0.3 | 0.3 | 8 | T | 1.0 |
| 1S | III | II | 2.0 | 200 | A | 1.0 | N | 0.3 | 0.3 | 8 | T | 1.0 | 1.0 | A | 0.5 | 0.2 | 8 | T | 7.0 | 1.3 | N | 0.3 | 0.3 | 8 | T | 1.0 |
| 4S | II | II | 2.0 | 200 | A | 1.0 | D | 0.6 | 0.3 | 4 | T | 0.5 | 1.0 | A | 0.5 | 0.2 | 4 | T | 7.0 | 1.0 | D | 0.6 | 0.3 | 4 | T | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.2 | D | 0.6 | 0.3 | 4 | T | 0.5 | 1.0 | A | 0.5 | 0.2 | 4 | T | 7.0 | 1.2 | D | 0.6 | 0.3 | 4 | T | 0.5 |
| 1 | II | II | 2.0 | 200 | A | 1.2 | J | 0.6 | 0.3 | 4 | Q | 1.0 | 1.0 | A | 0.6 | 0.0 | 4 | Q | 7.0 | 1.0 | J | 0.6 | 0.3 | 4 | Q | 1.5 |
| 1 | II | II | 2.0 | 200 | A | 1.0 | F | 0.6 | 0.3 | 3 | Q | 0.3 | 1.0 | A | 0.5 | 0.2 | 3 | Q | 5.0 | 1.0 | F | 0.6 | 0.3 | 3 | Q | 0.3 |
| 4S | II | II | 2.0 | 200 | A | 1.2 | D | 1.6 | 0.25 | 7 | X | 0.4 | 1.2 | A | 1.6 | 0.25 | 7 | R | 0.0 | 1.2 | D | 1.6 | 0.25 | 7 | X | 0.4 |
| 4S | II | II | 2.0 | 200 | A | 1.1 | O | 0.9 | 0.4 | 5 | T | 1.0 | 1.0 | A | 1.0 | 0.1 | 5 | T | 5.0 | 1.1 | O | 0.9 | 0.4 | 5 | T | 1.0 |
| 4S | II | II | 2.0 | 200 | A | 1.1 | D | 0.6 | 0.4 | 5 | T | 1.0 | 0.9 | A | 0.5 | 0.0 | 5 | T | 5.0 | 1.1 | D | 0.6 | 0.4 | 5 | T | 1.0 |
| 4 | II | I | 2.0 | 200 | S | 1.1 | D | 0.6 | 0.4 | 4 | R | 1.0 | 0.9 | A | 0.5 | 0.0 | 4 | T | 5.0 | 1.1 | D | 0.6 | 0.4 | 4 | R | 1.0 |

Gradation Processing: Rotation Amount (GA), Gradation Type (GT), Rotation Center (GC), Gradation Shifting Amount (GS)
Frequency Processing: Frequency Rank (RN), Enhancing Type (RT), Frequency Enhancement (RE)

## [ Pelvis 1 ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| Plain | 1 | 0500 | PELVIS, GENERAL (AP) | Observation of the pelvis, ilium, and peripheral soft parts | |
| | 1 | 0501 | L-SPINE, AP/OBL (AP) | Observation of the lumbar and thoracolumbar spine | |
| | 1 | 0502 | SAC/COCCYX, SI JNT (AP) | Observation of the sacrum and coccyx | |
| | 1 | 0503 | UTERUS, PREGNANCY (AP) | Exposure of fetus and placenta | |
| | 1 | 0504 | PELVIMETRY (AP) | Measurement of the pelvic dimensions or proportions | |
| | 1 | 0506 | PELVIS, PEDIATRICS (AP) | Observation of the pelvis and peripheral soft parts of infants (3 years old or less) | |
| | 1 | 0507 | LUMB., SOFT TISSUE (AP) | Observation of soft parts of the abdomen, kidney, and other organs | |
| | 1 | 0508 | HIP JOINT (AP) | Observation of the hip joint (Use the FIX MODE when protector is used.) | |
| | 1 | 050A | HIP J., PEDIATRICS (AP) | Observation of the hip joint of infants- 3 or less years of age. (Use the FIX MODE when protector is used.) | |
| | 1 | 0510 | PELVIS, PORTABLE (AP) | Observation of the pelvis, ilium, and peripheral soft parts for portable | |
| | 1 | 0511 | LUMBAR, LATERAL (AP) | Observation of the lumbar and thoracolumbar spine for lateral | |
| | 1 | 0512 | L5-S1 SPOT (AP) | Spot exposure from L5 to S1 | |
| | 1 | 0518 | FEMUR, PROXIMAL (AP) | Observation of femure | |
| | 1 | 0521 | SWIMMERS (AP) | Observation of shoulder joint at SWIMMERS technique | |
| | 1 | 0528 | HIP X-TABLE FIXED (AP) | Observation of the hip joint (Use the FIX MODE when protector is used.) | |
| | 1 | 0531 | L-SPINE LAT FIXED (AP) | Observation of the lumbar and thoracolumbar spine | |
| Contrast | 1 | 1500 | PELVIS, BL. VESSEL :C (AP) | Pelvic blood vessel exposure with a contrast medium | |
| | 1 | 1501 | BLADDER CONTRAST :C (AP) | Urinary bladder and urethra exposure with a contrast medium | |
| Tomography | 1 | 2500 | LUMBAR SPINE :T (AP) | Tomography of the lumbar and thoracolumbar spine | |
| | 1 | 2501 | SACRUM :T (AP) | Tomography of the sacrum | |
| | 1 | 2502 | HIP JOINT :T (AP) | Tomography of the hip joint and femoral region | |
| Plain | 2 | 0516 | PELVIS, PED.-1 (AP) | Low-dose exposure of the pelvis and peripheral soft parts of infants | |
| | 2 | 051A | HIP J., PED.-1 (AP) | Low-dose infantile hip joint exposure (Use the FIX MODE when protector is used.) | |
| | 2 | 050C | HIP, X-TABLE LAT. (AP) | Observation of the hip joint by axial projection | |

| EDR mode | | | | | | Display Parameter | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | Fix | | Preset mode | Two-image Display | | | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | | Right Image | | | | | | | One-image Display | | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE |
| 4S | II | II | 2.0 | 200 | A | 0.9 | O | 0.6 | 0.4 | 4 | T | 0.5 | 1.0 | A | 0.6 | -0.2 | 4 | T | 5.0 | 0.9 | O | 0.6 | 0.4 | 4 | T | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.1 | O | 0.9 | 0.4 | 5 | T | 0.5 | 1.0 | A | 0.9 | 0.1 | 5 | T | 5.0 | 1.1 | O | 0.9 | 0.4 | 5 | T | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 0.9 | O | 0.9 | 0.2 | 5 | T | 0.5 | 1.0 | A | 1.2 | 0.1 | 5 | T | 5.0 | 0.9 | O | 0.9 | 0.2 | 5 | T | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.1 | D | 0.6 | 0.2 | 3 | Q | 1.0 | 0.9 | A | 0.7 | 0.0 | 3 | Q | 5.0 | 1.1 | D | 0.6 | 0.2 | 3 | Q | 1.0 |
| 4S | II | II | 2.0 | 200 | A | 1.1 | D | 0.6 | 0.2 | 3 | Q | 1.0 | 0.9 | A | 0.7 | 0.0 | 3 | Q | 5.0 | 1.1 | D | 0.6 | 0.2 | 3 | Q | 1.0 |
| 4S | II | II | 2.0 | 200 | A | 1.3 | D | 1.6 | 0.2 | 5 | R | 0.3 | 0.9 | A | 1.2 | -0.2 | 5 | R | 3.0 | 1.3 | D | 1.6 | 0.2 | 5 | R | 0.3 |
| - | IV | II | 2.6 | 200 | A | 1.1 | F | 2.0 | 0.0 | 3 | Q | 1.0 | 0.7 | A | 1.6 | -0.2 | 3 | Q | 7.0 | 1.1 | F | 2.0 | 0.0 | 3 | Q | 1.0 |
| 4S | II | II | 2.0 | 200 | A | 1.3 | D | 1.6 | 0.4 | 5 | R | 0.5 | 0.9 | A | 1.6 | 0.0 | 5 | R | 5.0 | 1.3 | D | 1.6 | 0.4 | 5 | R | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.3 | D | 1.6 | 0.2 | 5 | R | 0.3 | 0.9 | A | 1.2 | -0.2 | 5 | R | 3.0 | 1.3 | D | 1.6 | 0.2 | 5 | R | 0.3 |
| 4S | II | II | 2.0 | 200 | A | 0.9 | O | 0.6 | 0.2 | 4 | T | 0.5 | 1.0 | A | 0.6 | -0.2 | 4 | T | 5.0 | 0.9 | O | 0.6 | 0.2 | 4 | T | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.1 | O | 0.9 | 0.45 | 5 | T | 0.3 | 1.0 | A | 0.9 | 0.1 | 5 | T | 5.0 | 1.1 | O | 0.9 | 0.45 | 5 | T | 0.3 |
| 4S | II | II | 2.0 | 200 | A | 0.9 | O | 0.9 | 0.3 | 5 | T | 0.5 | 1.0 | A | 1.2 | 0.1 | 5 | T | 5.0 | 0.9 | O | 0.9 | 0.3 | 5 | T | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.3 | D | 1.6 | 0.4 | 5 | R | 0.5 | 0.9 | A | 1.6 | 0.0 | 5 | R | 5.0 | 1.3 | D | 1.6 | 0.4 | 5 | R | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.1 | J | 0.9 | 0.7 | 5 | T | 0.5 | 1.0 | A | 0.9 | 0.1 | 5 | T | 5.0 | 1.1 | J | 0.9 | 0.7 | 5 | T | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.0 | 4 | T | 0.5 | 1.0 | A | 0.6 | -0.2 | 4 | T | 5.0 | 1.0 | O | 0.6 | 0.0 | 4 | T | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 1.0 | O | 0.9 | 0.0 | 5 | T | 0.5 | 1.0 | A | 0.9 | 0.1 | 5 | T | 5.0 | 1.0 | L | 0.9 | 0.0 | 5 | T | 0.5 |
| 4S | II | II | 2.0 | 200 | A | 0.9 | O | 0.6 | 0.5 | 4 | T | 1.0 | 1.0 | A | 0.5 | 0.0 | 4 | T | 5.0 | 0.9 | O | 0.6 | 0.5 | 4 | T | 1.0 |
| 4S | II | II | 2.0 | 200 | A | 1.2 | D | 0.6 | 0.3 | 4 | T | 0.5 | 1.0 | A | 0.6 | 0.0 | 4 | T | 7.0 | 1.2 | D | 0.6 | 0.3 | 4 | T | 0.5 |
| 1 | II | II | 2.0 | 200 | A | 1.1 | O | 0.9 | 0.4 | 4 | Q | 1.0 | 1.0 | A | 0.9 | 0.1 | 4 | Q | 7.0 | 1.1 | O | 0.9 | 0.4 | 4 | Q | 1.0 |
| 1 | II | II | 2.0 | 200 | A | 1.1 | O | 0.9 | 0.8 | 4 | Q | 1.0 | 1.0 | A | 0.9 | 0.5 | 4 | Q | 7.0 | 1.1 | O | 0.9 | 0.8 | 4 | Q | 1.0 |
| 1 | II | II | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.5 | 3 | T | 1.0 | 1.0 | A | 0.6 | 0.1 | 3 | T | 5.0 | 1.0 | O | 0.6 | 0.5 | 3 | T | 1.0 |
| 4S | II | II | 2.0 | 200 | A | 1.3 | D | 1.6 | 0.2 | 7 | X | 0.4 | 1.3 | D | 1.6 | 0.2 | 7 | R | 0.0 | 1.3 | D | 1.6 | 0.2 | 7 | X | 0.4 |
| 4S | II | II | 2.0 | 200 | A | 1.3 | D | 1.6 | 0.2 | 7 | X | 0.4 | 1.3 | D | 1.6 | 0.2 | 7 | R | 0.0 | 1.3 | D | 1.6 | 0.2 | 7 | X | 0.4 |
| - | V | II | 2.0 | 200 | A | 1.3 | D | 1.6 | 0.4 | 5 | T | 0.5 | 0.8 | O | 1.6 | 0.4 | 5 | T | 1.0 | 1.3 | D | 1.6 | 0.4 | 5 | T | 0.5 |

Gradation Processing
- Rotation Amount (GA)
- Gradation Type (GT)
- Rotation Center (GC)
- Gradation Shifting Amount (GS)

Frequency Processing
- Frequency Rank (RN)
- Enhancing Type (RT)
- Frequency Enhancement (RE)

## [ Pelvis 2 ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| Contrast | 2 | 1502 | ABD. HYSTERO. :C (AP) | Uterus and salpinx exposure with a constrast medium | |
| | 2 | 1503 | SEMI. VES., VAS. :C (AP) | Seminal vesicle and seminal duct exposure with a contrast medium | |
| | 2 | 1505 | PELVIS, MYELO. :C (AP) | Pelvic spinal canal, extradural space, and intervertebral disc exposure with a contrast medium | |
| | 2 | 1506 | PELVIS, LYMPHA :C (AP) | Pelvic lymphatic duct and lymph node exposure with a contrast medium | |
| | 2 | 1507 | HIP JNT, ARTHRO. :C (AP) | Hip joint exposure with a contrast medium | |
| Magni-fication | 2 | 5506 | PELVIS, MAG :M (AP) | 3× or more magnification of the pelvic lymphatic duct, bone, and other organs | |

| EDR mode | | | | | | Display Parameter | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | Fix | | Preset mode | Two-image Display | | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | | Right Image | | | | | | | One-image Display | | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE |
| 4S | II | II | 2.0 | 200 | A | 1.2 | D | 0.6 | 0.3 | 4 | T | 1.0 | 1.0 | A | 0.6 | 0.0 | 4 | T | 7.0 | 1.2 | D | 0.6 | 0.3 | 4 | T | 1.0 |
| 4S | II | II | 2.0 | 200 | A | 1.2 | D | 0.6 | 0.3 | 4 | T | 1.0 | 1.0 | A | 0.6 | 0.0 | 4 | T | 7.0 | 1.2 | D | 0.6 | 0.3 | 4 | T | 1.0 |
| 4S | II | II | 2.0 | 200 | A | 1.1 | O | 0.9 | 0.4 | 5 | T | 1.0 | 1.0 | A | 1.0 | 0.1 | 5 | T | 5.0 | 1.1 | O | 0.9 | 0.4 | 5 | T | 1.0 |
| 4S | II | II | 2.0 | 200 | A | 0.9 | O | 0.6 | 0.5 | 4 | T | 1.0 | 1.0 | A | 0.5 | 0.0 | 4 | T | 5.0 | 0.9 | O | 0.6 | 0.5 | 4 | T | 1.0 |
| 4S | II | II | 2.0 | 200 | A | 1.3 | D | 1.6 | 0.5 | 4 | T | 1.0 | 0.9 | A | 1.6 | 0.0 | 4 | T | 5.0 | 1.3 | D | 1.6 | 0.5 | 4 | T | 1.0 |
| 4 | II | I | 2.0 | 200 | S | 0.9 | O | 0.6 | 0.5 | 5 | R | 1.0 | 1.0 | A | 0.5 | 0.0 | 5 | T | 5.0 | 0.9 | O | 0.6 | 0.5 | 5 | R | 1.0 |

Gradation Processing
- Rotation Amount (GA)
- Gradation Type (GT)
- Rotation Center (GC)
- Gradation Shifting Amount (GS)

Frequency Processing
- Frequency Rank (RN)
- Enhancing Type (RT)
- Frequency Enhancement (RE)

## [ Upper Extremity ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| Plain | 1 | 0600 | HUMERUS (AP) | Observation of the humerus, its soft part, and the elbow joint | |
| | 1 | 0601 | FOREARM (AP) | Observation of the antebrachial bone, its soft part, and the wrist joint | |
| | 1 | 0603 | HUMERUS SOFT TISS. (AP) | Observation of the brachial soft part as the main target | |
| | 1 | 0605 | FORE ARM, SOFT TISS. (AP) | Observation of the antebrachial soft part as the main target | |
| | 1 | 0606 | HAND (AP) | Observation of the metacarpal bone and peripheral soft parts | |
| | 1 | 0607 | FINGER (AP) | Observation of the phalanges and peripheral soft parts | |
| | 1 | 0608 | ARM, PEDIATRICS (AP) | Observation of the arm of infants (3 years old or less) | |
| | 1 | 0609 | HAND, PEDIATRICS (AP) | Observation of the hand of infants (3 years old or less) | |
| | 1 | 060B | WRIST CARPAL TUNN. (AP) | Elbow joint and carpal tunnel exposure by axial projection | |
| | 1 | 0610 | ELBOW (AP) | Observation of the elbow | |
| | 1 | 0611 | WRIST (AP) | Observation of wrist and wrist joint | |
| | 1 | 0616 | HAND, LATERAL (AP) | Observation of hand lateral | |
| | 1 | 0620 | UPPER EXT. CAST (AP) | Observation of upper ext. in cast | |
| Contrast | 1 | 1600 | UP. ARM, BL. VESSEL :C (AP) | Brachial blood vessel exposure with a contrast medium | |
| | 1 | 1601 | FO. ARM, BL. VESSEL :C (AP) | Antebrachial blood vessel exposure with a contrast medium | |
| | 1 | 1602 | HAND, BL. VESSEL:C (AP) | Hand blood vessel exposure with a contast medium | |
| Tomography | 1 | 2601 | ELBOW JOINT :T (AP) | Elbow joint tomography | |
| Contrast | 2 | 1610 | UPPER ARM, LYMPHA :C (AP) | Brachial lymphatic duct and lymph node exposure with a contrast medium | |
| | 2 | 1611 | FORE ARM, LYMPHA :C (AP) | Antebrachial lymphatic duct and lymph node exposure with a contrast medium | |
| | 2 | 1612 | HAND, LYMPHA :C (AP) | Exposure with a contrast medium of the lymphatic duct and lymph node in the hand | |
| | 2 | 1620 | ELBOW JNT, ARTHRO :C (AP) | Elbow joint exposure with a contrast medium | |
| | 2 | 1622 | WRIST JNT, ARTHRO :C (AP) | Exposure of the joint of the hand with a contrast medium | |
| Magnification | 2 | 4607 | UP. EXTREMITY, MAG :M (AP) | 3× or more magnification of the phalanges and other bones | |

| EDR mode | | | | | | Display Parameter | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | Fix | | Preset mode | Two-image Display | | | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | | Right Image | | | | | | | One-image Display | | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.4 | 5 | T | 0.5 | 1.0 | A | 0.6 | 0.0 | 5 | T | 5.0 | 0.8 | O | 0.6 | 0.4 | 5 | T | 0.5 |
| 4S | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.4 | 7 | T | 1.0 | 1.0 | A | 0.8 | 0.0 | 7 | T | 5.0 | 0.8 | O | 0.6 | 0.4 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.4 | 3 | T | 0.5 | 1.0 | A | 0.6 | 0.0 | 3 | T | 5.0 | 1.0 | O | 0.6 | 0.4 | 3 | T | 0.5 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.2 | 3 | T | 0.5 | 1.0 | A | 0.6 | 0.0 | 3 | T | 5.0 | 1.0 | O | 0.6 | 0.2 | 3 | T | 0.5 |
| 4S | I | III | 2.0 | 200 | A | 0.9 | O | 0.6 | 0.35 | 7 | T | 1.0 | 0.9 | A | 0.6 | 0.35 | 7 | T | 5.0 | 0.9 | O | 0.6 | 0.35 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 0.9 | O | 0.6 | 0.3 | 7 | T | 1.0 | 0.9 | A | 0.7 | 0.1 | 7 | T | 5.0 | 0.9 | O | 0.6 | 0.3 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.5 | 5 | T | 0.3 | 1.0 | A | 0.6 | 0.1 | 5 | T | 3.0 | 1.0 | O | 0.6 | 0.5 | 5 | T | 0.3 |
| 4S | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.4 | 5 | T | 0.3 | 0.9 | A | 0.7 | 0.1 | 5 | T | 3.0 | 0.8 | O | 0.6 | 0.4 | 5 | T | 0.3 |
| - | IV | III | 2.0 | 200 | A | 1.1 | F | 2.0 | 0.0 | 7 | T | 1.0 | 0.7 | A | 1.6 | -0.2 | 7 | T | 7.0 | 1.1 | F | 2.0 | 0.0 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 0.9 | O | 0.6 | 0.4 | 7 | T | 1.0 | 1.0 | A | 0.6 | 0.0 | 7 | T | 5.0 | 0.9 | O | 0.6 | 0.4 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.3 | 7 | T | 1.0 | 1.0 | A | 0.8 | 0.0 | 7 | T | 5.0 | 0.8 | O | 0.6 | 0.3 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.7 | 7 | T | 1.0 | 0.9 | A | 0.6 | 0.7 | 7 | T | 5.0 | 1.0 | O | 0.6 | 0.7 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.5 | 5 | T | 0.5 | 1.0 | A | 0.6 | 0.0 | 5 | T | 5.0 | 0.8 | O | 0.6 | 0.5 | 5 | T | 0.5 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.5 | 4 | T | 1.0 | 1.0 | A | 0.5 | 0.0 | 4 | T | 5.0 | 0.8 | O | 0.6 | 0.5 | 4 | T | 1.5 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.3 | 4 | T | 1.0 | 1.0 | A | 0.7 | 0.0 | 4 | T | 5.0 | 0.8 | O | 0.6 | 0.3 | 4 | T | 1.5 |
| 4S | I | III | 2.0 | 200 | A | 0.9 | O | 0.6 | 0.6 | 4 | T | 1.0 | 0.9 | A | 0.7 | 0.2 | 4 | T | 5.0 | 0.8 | O | 0.6 | 0.6 | 4 | T | 1.5 |
| 1 | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.4 | 5 | T | 1.0 | 1.0 | A | 0.6 | 0.0 | 5 | T | 5.0 | 0.9 | O | 0.6 | 0.4 | 5 | T | 1.5 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.5 | 4 | T | 1.0 | 1.0 | A | 0.5 | 0.0 | 4 | T | 5.0 | 0.8 | O | 0.6 | 0.5 | 4 | T | 1.5 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.3 | 4 | T | 1.0 | 1.0 | A | 0.7 | 0.0 | 4 | T | 5.0 | 0.8 | O | 0.6 | 0.3 | 4 | T | 1.5 |
| 4S | I | III | 2.0 | 200 | A | 0.9 | O | 0.6 | 0.6 | 4 | T | 1.0 | 0.9 | A | 0.7 | 0.2 | 4 | T | 5.0 | 0.8 | O | 0.6 | 0.6 | 4 | T | 1.5 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.4 | 3 | T | 1.0 | 1.0 | A | 0.6 | 0.3 | 3 | T | 5.0 | 0.8 | O | 0.6 | 0.4 | 3 | T | 1.5 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.2 | 3 | T | 1.0 | 1.0 | A | 0.8 | 0.0 | 3 | T | 5.0 | 0.8 | O | 0.6 | 0.2 | 3 | T | 1.5 |
| 4 | I | II | 2.0 | 200 | S | 1.1 | I | 0.6 | 0.3 | 5 | R | 1.0 | 0.9 | A | 0.7 | 0.1 | 5 | R | 5.0 | 1.1 | I | 0.6 | 0.3 | 5 | R | 1.0 |

Gradation Processing
- Rotation Amount (GA)
- Gradation Type (GT)
- Rotation Center (GC)
- Gradation Shifting Amount (GS)

Frequency Processing
- Frequency Rank (RN)
- Enhancing Type (RT)
- Frequency Enhancement (RE)

## [ Lower Extremity 1 ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| Plain | 1 | 0700 | FEMUR, DISTAL (AP) | Observation of the femoral bone, soft tissues and the knee (It should be noted however that knee joint observation by axial projection is excluded.) | |
| | 1 | 0701 | TIB/FIB (AP) | Observation of the crural bone and soft part | |
| | 1 | 0703 | FEMUR, SOFT TISS. (AP) | Observation of the femoral soft part as the main target | |
| | 1 | 0705 | TIB/FIB, SOFT TISS. (AP) | Observation of the crural soft part as the main target | |
| | 1 | 0706 | FOOT (AP) | Observation of the foot, articulation, tarsal bone, and calcaneus by axial projection | |
| | 1 | 0707 | TOES (AP) | Observation of the toe and phalanges | |
| | 1 | 0708 | LEG. PEDIATRICS (AP) | Observation of the lower extremities of infants (3 years old or less) | |
| | 1 | 0709 | FOOT, PEDIATRICS (AP) | Observation of the foot of infants (3 years old or less) | |
| | 1 | 070B | KNEE, SUNRISE (AP) | Patellar exposure by axial projection | |
| | 1 | 0710 | KNEE, AP/OBL (AP) | Observation of the knee joint | |
| | 1 | 0711 | ANKLE (AP) | Observation of the ankle joint | |
| | 1 | 0716 | FOOT, LATERAL (AP) | Observation of the foot, articulation, tarsal bone, and calcaneus by axial projection for lateral position | |
| | 1 | 071B | PATL. AXL., ARTHRO :C (AP) | Observation of the patella axial at arthrography | |
| | 1 | 0720 | KNEE, LATERAL (AP) | Observation of the knee joint for lateral position | |
| | 1 | 0730 | LOWER EXT. CAST (AP) | Observation of the lower extrem. in cast | |
| | 1 | 0731 | CALCANEOUS, AXIAL (AP) | | |
| Contast | 1 | 1700 | THIGH, BL. VESSEL :C (AP) | Femoral blood vessel exposure with a contrast medium | |
| | 1 | 1701 | LO. LEG, BL. VESSEL :C (AP) | Crural blood vessel exposure with a contrast medium | |
| | 1 | 1702 | FOOT, BL. VESSEL :C (AP) | Foot blood vessel exposure with a contrast medium | |
| Tomography | 1 | 2701 | KNEE JOINT :T (AP) | Knee joint tomography | |
| | 1 | 2702 | ANKLE JOINT :T (AP) | Ankle joint tomography | |
| Contrast | 2 | 1710 | THIGH, LYMPHA :C (AP) | Femoral lymphatic duct and lymph node exposure with a contrast medium | |
| | 2 | 1711 | LOWER LEG, LYMPHA :C (AP) | Crural lymphatic duct and lymph node exposure with a contrast medium | |
| | 2 | 1712 | FOOT, LYMPHA :C (AP) | Exposure of the lymphatic duct and lymph node of the foot with a contrast medium | |
| | 2 | 1720 | KNEE JNT, ARTHRO :C (AP) | Knee joint exposure with a contrast medium | |

| EDR mode | | | | | | Display Parameter | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | Fix | | Preset mode | Two-image Display | | | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | | Right Image | | | | | | | One-image Display | | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE |
| 4S | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.5 | 7 | T | 1.0 | 1.0 | A | 0.6 | 0.1 | 7 | T | 5.0 | 0.8 | O | 0.6 | 0.5 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.4 | 7 | T | 1.0 | 1.0 | A | 0.7 | 0.1 | 7 | T | 5.0 | 0.8 | O | 0.6 | 0.4 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.5 | 3 | T | 0.5 | 1.0 | A | 0.6 | 0.1 | 3 | T | 5.0 | 1.0 | O | 0.6 | 0.5 | 3 | T | 0.5 |
| 4S | I | III | 2.0 | 200 | A | 0.9 | O | 0.6 | 0.4 | 3 | T | 0.5 | 1.0 | A | 0.7 | 0.1 | 3 | T | 5.0 | 0.9 | O | 0.6 | 0.4 | 3 | T | 0.5 |
| 4S | VI | III | 2.0 | 200 | A | 0.9 | O | 0.6 | 0.1 | 7 | T | 1.0 | 0.8 | A | 1.0 | 0.1 | 7 | T | 5.0 | 0.9 | O | 0.6 | 0.1 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 0.9 | O | 0.6 | -0.2 | 7 | T | 1.0 | 0.9 | A | 0.9 | -0.1 | 7 | T | 5.0 | 0.9 | O | 0.6 | -0.2 | 5 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.5 | 5 | T | 0.3 | 1.0 | A | 0.6 | 0.1 | 5 | T | 3.0 | 1.0 | O | 0.6 | 0.5 | 5 | T | 0.3 |
| 4S | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.3 | 5 | T | 0.3 | 0.9 | A | 0.7 | 0.0 | 5 | T | 3.0 | 0.8 | O | 0.6 | 0.3 | 5 | T | 0.3 |
| - | IV | III | 2.6 | 200 | A | 1.1 | F | 2.0 | 0.0 | 5 | T | 1.0 | 0.7 | A | 2.0 | -0.5 | 5 | T | 7.0 | 1.1 | F | 2.0 | 0.0 | 5 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 0.9 | O | 0.6 | 0.4 | 7 | T | 1.0 | 1.0 | A | 0.6 | 0.1 | 7 | T | 5.0 | 0.9 | O | 0.6 | 0.4 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.4 | 7 | T | 1.0 | 1.0 | A | 0.7 | 0.1 | 7 | T | 5.0 | 0.8 | O | 0.6 | 0.4 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.3 | 7 | T | 1.0 | 0.8 | A | 1.0 | 0.1 | 7 | T | 5.0 | 0.8 | O | 0.6 | 0.3 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 1.1 | F | 2.0 | 0.0 | 3 | T | 1.0 | 0.7 | A | 2.0 | -0.5 | 3 | T | 7.0 | 1.1 | F | 2.0 | 0.0 | 3 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.5 | 7 | T | 1.0 | 1.0 | A | 0.6 | 0.1 | 7 | T | 5.0 | 0.8 | O | 0.6 | 0.5 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.5 | 5 | T | 0.5 | 1.0 | A | 0.6 | 0.1 | 5 | T | 5.0 | 0.8 | O | 0.6 | 0.5 | 5 | T | 0.5 |
| 4S | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.4 | 7 | T | 1.0 | 1.0 | A | 0.7 | 0.1 | 7 | T | 5.0 | 0.8 | O | 0.6 | 0.4 | 7 | T | 1.0 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.6 | 4 | T | 1.0 | 1.0 | A | 0.5 | 0.1 | 4 | T | 5.0 | 0.8 | O | 0.6 | 0.6 | 4 | T | 1.5 |
| 4S | I | III | 2.0 | 200 | A | 0.9 | O | 0.6 | 0.5 | 4 | T | 1.0 | 1.0 | A | 0.6 | 0.1 | 4 | T | 5.0 | 0.8 | O | 0.6 | 0.5 | 4 | T | 1.5 |
| 4S | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.4 | 4 | T | 1.0 | 0.8 | A | 1.0 | 0.1 | 4 | T | 5.0 | 0.7 | O | 0.6 | 0.4 | 4 | T | 1.5 |
| 1 | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.4 | 5 | T | 1.0 | 1.0 | A | 0.6 | 0.1 | 5 | T | 5.0 | 0.9 | O | 0.6 | 0.4 | 5 | T | 1.5 |
| 1 | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.3 | 5 | T | 1.0 | 0.8 | A | 1.0 | 0.1 | 5 | T | 5.0 | 0.7 | O | 0.6 | 0.3 | 5 | T | 1.5 |
| 4S | II | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.6 | 4 | T | 1.0 | 1.0 | A | 0.5 | 0.1 | 4 | T | 5.0 | 0.8 | O | 0.6 | 0.6 | 4 | T | 1.5 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.5 | 4 | T | 1.0 | 1.0 | A | 0.6 | 0.1 | 4 | T | 5.0 | 0.8 | O | 0.6 | 0.5 | 4 | T | 1.5 |
| 4S | I | III | 2.0 | 200 | A | 0.8 | O | 0.6 | 0.4 | 4 | T | 1.0 | 0.8 | A | 1.0 | 0.1 | 4 | T | 5.0 | 0.7 | O | 0.6 | 0.4 | 4 | T | 1.5 |
| 4S | I | III | 2.0 | 200 | A | 1.0 | O | 0.6 | 0.5 | 3 | T | 1.0 | 1.0 | A | 0.6 | 0.1 | 3 | T | 5.0 | 0.8 | O | 0.6 | 0.5 | 3 | T | 1.5 |

Gradation Processing: Rotation Amount (GA), Gradation Type (GT), Rotation Center (GC), Gradation Shifting Amount (GS)
Frequency Processing: Frequency Rank (RN), Enhancing Type (RT), Frequency Enhancement (RE)

## [ Lower Extremity 2 ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| Contrast | 2 | 1722 | ANKLE JNT, ARTHRO :C (AP) | Ankle joint exposure with a contrast medium | |
| | 2 | 071B | PATL. AXL., ARTHRO :C (AP) | Exposure of patellar with a contrast medium by axial projection | |
| Magni-fication | 2 | 4707 | LO. EXTREMITY, MAG :M (AP) | 3× or more magnification of the toe and other sites | |

| EDR mode | | | | | | Display Parameter | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | Fix | | Preset mode | Two-image Display | | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | | Right Image | | | | | | | One-image Display | | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE |
| 4S | I | III | 2.0 | 200 | A | 0.9 | O | 0.6 | 0.4 | 3 | T | 1.0 | 1.0 | A | 0.6 | 0.1 | 3 | T | 5.0 | 0.8 | O | 0.6 | 0.4 | 3 | T | 1.5 |
| - | IV | III | 2.6 | 200 | A | 1.1 | F | 2.0 | 0.0 | 3 | T | 1.0 | 0.7 | A | 2.0 | -0.5 | 3 | T | 7.0 | 1.1 | F | 2.0 | 0.0 | 3 | T | 1.0 |
| 4 | I | II | 2.0 | 200 | S | 1.1 | I | 0.6 | -0.1 | 5 | R | 1.0 | 0.9 | A | 1.0 | 0.0 | 5 | R | 5.0 | 1.1 | I | 0.6 | -0.1 | 5 | R | 1.0 |

Gradation Processing
- Rotation Amount (GA)
- Gradation Type (GT)
- Rotation Center (GC)
- Gradation Shifting Amount (GS)

Frequency Processing
- Frequency Rank (RN)
- Enhancing Type (RT)
- Frequency Enhancement (RE)

## [ Test 1 ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| | 1 | 0900 | SENSITIVITY | | |
| | 1 | 0901 | SHARPNESS | | |
| | 1 | 0902 | LINEARITY | | |
| | 1 | 0903 | IMAGE-FORMAT | | |
| | 1 | 0904 | CONTRAST | | |
| | 1 | 0905 | MAX 0.5 | | |
| | 1 | 0906 | MAX 1.0 | | |
| | 1 | 0907 | MAX 2.0 | | |
| | 1 | 0908 | MAX 3.0 | | |
| | 1 | 0909 | MAX 4.0 | | |
| | 1 | 090A | AVE 0.5 | | |
| | 1 | 090B | AVE 1.0 | | |
| | 1 | 090C | AVE 2.0 | | |
| | 1 | 090D | AVE 3.0 | | |
| | 1 | 090E | AVE 4.0 | | |
| | 1 | 0910 | SENSITIVITY HQ | Sensitivity for HQ image (50 reading) | |
| | 1 | 091B | SHAD. /RELATIVE SENS. | A test menu that subjects an IP to uniform exposure to check shading uniformity and S values. SEMI AUTO mode applied at L=1. | |
| | 1 | 091B | 1 SHOT PHANTOM | A test menu that exposes a phantom for checking several performance items. | |
| | 1 | 091B | ERASURE (PRE-EXPOSURE) | A test menu that subjects an IP to a large exposure dose of approximately 100mR to 200mR. | |
| | 1 | 091E | ERASURE (REFRESHED IP) | A test menu that handles an IP that has been subjected to Erasure2 (Refreshed IP). | |
| | 1 | 091E | DARK NOISE TEST | A test menu that checks occurrence of an error after Erasure2 (Refreshed IP) is conducted. | |
| | 1 | 5900 | AVE5CT08 | This is to output images in 0.8 (GT:A) of density for Semi III (CT). | Auto V (Dmin = 1.0) using the Type II $S_2$ in the Auto Mode. |
| | 1 | 5901 | AVE5RT08 | This is to output images in 0.8 (GT:A) of density for Semi III (RT). | Auto V (Dmin = 0.4) using the Type II $S_2$ in the Auto Mode. |
| | 1 | 5902 | AVE5RM08 | This is to output images in 0.8 (GT:A) of density for Semi III (RM). | Auto V (Dmin = 0.2) using the Type II $S_2$ in the Auto Mode. |
| | 1 | 5903 | AVE5RB08 | This is to output images in 0.8 (GT:A) of density for Semi III (RB). | Auto V (Dmin = 0.0) using the Type II $S_2$ in the Auto Mode. |

| EDR mode | | | | | | Display Parameter | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | | Fix | Preset mode | Two-image Display | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | | Right Image | | | | | | | One-image Display | | | | | | | | | | | | | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | | | | | | | | | | |
| - | V | I | 1.0 | 200 | S | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | I | 1.0 | 200 | S | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | I | 3.0 | 200 | F | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | I | 1.0 | 200 | S | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | | | | | | | | | | |
| - | V | I | 2.0 | 200 | S | 1.3 | C | 1.2 | 0.0 | 3 | R | 0.0 | 1.3 | C | 1.2 | 0.0 | 3 | R | 3.0 | 1.3 | C | 1.2 | 0.0 | 3 | R | 0.0 | | | | | | | | | | |
| - | IV | I | 0.5 | 200 | A | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | IV | I | 1.0 | 200 | A | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | IV | I | 2.0 | 200 | A | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | IV | I | 3.0 | 200 | A | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | IV | I | 4.0 | 200 | A | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | I | 0.5 | 200 | S | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | I | 1.0 | 200 | S | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | I | 2.0 | 200 | S | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | I | 3.0 | 200 | S | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | I | 4.0 | 200 | S | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | I | 1.0 | 200 | S | 1.0 | A | 1.2 | 0.0 | 3 | F | 5.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | I | 1.0 | 200 | S | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | I | 1.0 | 200 | S | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | I | 1.0 | 200 | F | 1.0 | A | 1.0 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | I | 4.0 | 200 | F | 1.0 | A | 1.0 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | I | 4.0 | 200 | F | 1.0 | A | 1.0 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | 1.0 | A | 1.2 | 0.0 | 3 | F | 0.0 | | | | | | | | | | |
| - | V | III(CT) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | | | | | | | |
| - | V | III(RT) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | | | | | | | |
| - | V | III(RM) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | | | | | | | |
| - | V | III(RB) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | | | | | | | |

Gradation Processing: Rotation Amount (GA), Gradation Type (GT), Rotation Center (GC), Gradation Shifting Amount (GS)
Frequency Processing: Frequency Rank (RN), Enhancing Type (RT), Frequency Enhancement (RE)

## [ Test 2 ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| | 1 | 5904 | AVE5CB08 | This is to output images in 0.8 (GT:A) of density for Semi III (CB). | Auto V (Dmin = 0.6) using the Type II $S_2$ in the Auto Mode. |
| | 1 | 5905 | AVE5LB08 | This is to output images in 0.8 (GT:A) of density for Semi III (LB). | Auto V (Dmin = 1.2) using the Type II $S_2$ in the Auto Mode. |
| | 1 | 5906 | AVE5LM08 | This is to output images in 0.8 (GT:A) of density for Semi III (LM). | Auto V (Dmin = 1.4) using the Type II $S_2$ in the Auto Mode. |
| | 1 | 5907 | AVE5LT08 | This is to output images in 0.8 (GT:A) of density for Semi III (LT). | Auto V (Dmin = 1.6) using the Type II $S_2$ in the Auto Mode. |
| | 1 | 5908 | AVE5CM08 | This is to output images in 0.8 (GT:A) of density for Semi III (CM). | Auto V (Dmin = 0.8) using the Type II $S_2$ in the Auto Mode. |
| | 1 | 6900 | AVE5CT12 | This is to output images in 1.2 (GT:A) of density for Semi III (CT). | Auto IV (Dmin = 1.8) using the Type II $S_2$ in the Auto Mode. |
| | 1 | 6901 | AVE5RT12 | This is to output images in 1.2 (GT:A) of density for Semi III (RT). | Auto IV (Dmax = 1.2) using the Type II $S_1$ in the Auto Mode. |
| | 1 | 6902 | AVE5RM12 | This is to output images in 1.2 (GT:A) of density for Semi III (RM). | Auto IV (Dmax = 1.0) using the Type II $S_1$ in the Auto Mode. |
| | 1 | 6903 | AVE5RB12 | This is to output images in 1.2 (GT:A) of density for Semi III (RB). | Auto IV (Dmax = 0.8) using the Type II $S_1$ in the Auto Mode. |
| | 1 | 6904 | AVE5CB12 | This is to output images in 1.2 (GT:A) of density for Semi III (CB). | Auto IV (Dmax = 1.4) using the Type II $S_1$ in the Auto Mode. |
| | 1 | 6905 | AVE5LB12 | This is to output images in 1.2 (GT:A) of density for Semi III (LB). | Auto IV (Dmax = 2.0) using the Type II $S_1$ in the Auto Mode. |
| | 1 | 6906 | AVE5LM12 | This is to output images in 1.2 (GT:A) of density for Semi III (LM). | Auto IV (Dmax = 2.2) using the Type II $S_1$ in the Auto Mode. |
| | 1 | 6907 | AVE5LT12 | This is to output images in 1.2 (GT:A) of density for Semi III (LT). | Auto IV (Dmax = 1.0) using the Type II $S_1$ in the Auto Mode. |
| | 1 | 6908 | AVE5CM12 | This is to output images in 1.2 (GT:A) of density for Semi III (CM). | Auto IV (Dmax = 1.6) using the Type II $S_1$ in the Auto Mode. |
| | 1 | 7900 | AVE5CT16 | This is to output images in 1.6 (GT:A) of density for Semi III (CT). | Auto IV (Dmax = 1.8) using the Type I $S_1$ in the Auto Mode. |
| | 1 | 7901 | AVE5RT16 | This is to output images in 1.6 (GT:A) of density for Semi III (RT). | Auto IV (Dmax = 1.2) using the Type I $S_1$ in the Auto Mode. |
| | 1 | 7902 | AVE5RM16 | This is to output images in 1.6 (GT:A) of density for Semi III (RM). | Auto IV (Dmax = 1.0) using the Type I $S_1$ in the Auto Mode. |
| | 1 | 7903 | AVE5RB16 | This is to output images in 1.6 (GT:A) of density for Semi III (RB). | Auto IV (Dmax = 0.8) using the Type I $S_1$ in the Auto Mode. |
| | 1 | 7904 | AVE5CB16 | This is to output images in 1.6 (GT:A) of density for Semi III (CB). | Auto IV (Dmax = 1.4) using the Type I $S_1$ in the Auto Mode. |
| | 1 | 7905 | AVE5LB16 | This is to output images in 1.6 (GT:A) of density for Semi III (LB). | Auto IV (Dmax = 2.0) using the Type I $S_1$ in the Auto Mode. |
| | 1 | 7906 | AVE5LM16 | This is to output images in 1.6 (GT:A) of density for Semi III (LM). | Auto IV (Dmax = 2.2) using the Type I $S_1$ in the Auto Mode. |
| | 1 | 7907 | AVE5LT16 | This is to output images in 1.6 (GT:A) of density for Semi III (LT). | Auto IV (Dmax = 2.4) using the Type I $S_1$ in the Auto Mode. |
| | 1 | 7908 | AVE5CM16 | This is to output images in 1.6 (GT:A) of density for Semi III (CM). | Auto IV (Dmax = 1.8) using the Type I $S_1$ in the Auto Mode. |

| EDR mode | | | | | | Display Parameter | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | Fix | | Preset mode | Two-image Display | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | | Right Image | | | | | | | One-image Display | | | | | | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | GA | GT | GC | GS | RN | RT | RE | | | | |
| - | V | III(CB) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | V | III(LB) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | V | III(LM) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | V | III(LT) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | V | III(CM) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(CT) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(RT) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(RM) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(RB) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(CB) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(LB) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(LM) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(LT) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(CM) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(CT) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(RT) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(RM) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(RB) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(CB) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(LB) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(LM) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(LT) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |
| - | IV | III(CM) | 2.0 | 200 | S | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | 1.0 | E | 1.6 | 0.0 | 4 | R | 1.0 | 1.0 | E | 1.6 | -0.2 | 4 | R | 1.0 | | | | |

Gradation Processing: Rotation Amount (GA), Gradation Type (GT), Rotation Center (GC), Gradation Shifting Amount (GS)
Frequency Processing: Frequency Rank (RN), Enhancing Type (RT), Frequency Enhancement (RE)

## [ Dynamic Range Control Processing/Tomographic Artifacts Suppression Processing 1 ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| Plain | 1 | 0111 | C-SPINE, LAT. (AP) | Observation of the cervical spine | |
| | 1 | 0200 | CHEST, GENREAL (PA) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows | |
| | 1 | 0202 | RIBS, UPPER (AP) | Observation of the superior ribs | |
| | 1 | 0209 | T-SPINE, LAT. (AP) | Observation of the thoracic and cervicothoracic spine (this menu is used only when the enface radiogram is different in density from the oblique radiogram in particular) | |
| | 1 | 020A | STERNUM, LATERAL (AP) | Exposure of thoracic soft parts; observation of the chest wall, axilla, and other sites | |
| | 1 | 020B | SHOULDER (AP) | Observation of the frontal and peripheral soft parts of the shoulder joint | |
| | 1 | 0212 | RIB, UPPER OBL. (AP) | Observation of the superior ribs oblique | |
| | 1 | 0230 | CHEST, LATERAL (PA) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows (this menu is used only when the enface radiogram is different in density from the oblique radiogram in particular) | |
| | 1 | 0240 | CHEST, AP NON-GRID (PA) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows without grid | |
| | 1 | 0250 | CHEST, PORTABLE (PA) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows for portable | |
| | 1 | 0260 | CHEST, DECUB. (PA) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows for decubitus | |
| | 1 | 0280 | CHEST, AP (GRID) (AP) | Plain thoracic exposure; observation of the lung field and mediastinum for shadows with grid | |
| | 1 | 0500 | PELVIS, GENERAL (AP) | Observation of the pelvis, ilium, and peripheral soft parts | |
| | 1 | 0508 | HIP JOINT (AP) | Observation of the hip joint (Use the FIX MODE when protector is used.) | |
| | 1 | 0510 | PELVIS, PORTABLE (AP) | Observation of the pelvis, ilium, and peripheral soft parts for portable | |
| | 1 | 0511 | LUMBER, LATERAL (AP) | Observation of the lumbar and thoracolumbar spine for lateral | |
| | 1 | 0518 | FEMUR, PROXIMAL (AP) | Observation of femure | |
| | 1 | 0521 | SWIMMERS (AP) | Observation of shoulder joint at SWIMMERS technique | |
| | 1 | 0600 | HUMERUS (AP) | Observation of the humerus, its soft part, and the elbow joint | |
| | 1 | 0601 | FOREARM (AP) | Observation of the antebrachial bone, its soft part, and the wrist joint | |
| | 1 | 0606 | HAND (AP) | Observation of the metacarpal bone and peripheral soft parts | |
| | 1 | 0607 | FINGER (AP) | Observation of the phalanges and peripheral soft parts | |
| | 1 | 0610 | ELBOW (AP) | Observation of the elbow | |
| | 1 | 0611 | WRIST (AP) | Observation of wrist and wrist joint | |
| | 1 | 0616 | HAND, LATERAL(AP) | Observation of hand lateral | |

| EDR mode | | | | | | Display Parameter | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | Fix | | Preset mode | Two-image Display | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | Right Image | | | | | | One-image Display | | | | | | | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | DRN | DRT | DRE | ORN | ORT | ORE | DRN | DRT | DRE | ORN | ORT | ORE | DRN | DRT | DRE | ORN | ORT | ORE | | | | | | |
| 4S | II | II | 2.4 | 200 | A | 2 | C | 0.5 | 5 | 1 | 0.0 | 2 | C | 0.5 | 5 | 1 | 0.0 | 2 | C | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | II | IV | 2.2 | 200 | A | 2 | B | 0.6 | 5 | 1 | 0.0 | 2 | B | 0.0 | 5 | 1 | 0.0 | 2 | B | 0.6 | 5 | 1 | 0.0 | | | | | | |
| 4S | II | II | 2.2 | 200 | A | 2 | B | 0.5 | 5 | 1 | 0.0 | 2 | B | 0.5 | 5 | 1 | 0.0 | 2 | B | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | VI | II | 2.2 | 200 | A | 2 | C | 0.6 | 5 | 1 | 0.0 | 2 | C | 0.6 | 5 | 1 | 0.0 | 2 | C | 0.6 | 5 | 1 | 0.0 | | | | | | |
| - | IV | II | 2.6 | 200 | A | 2 | C | 0.5 | 5 | 1 | 0.0 | 2 | C | 0.5 | 5 | 1 | 0.0 | 2 | C | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | VII | II | 2.2 | 200 | A | 2 | G | 0.5 | 5 | 1 | 0.0 | 2 | G | 0.5 | 5 | 1 | 0.0 | 2 | G | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | II | II | 2.2 | 200 | A | 2 | B | 0.5 | 5 | 1 | 0.0 | 2 | B | 0.5 | 5 | 1 | 0.0 | 2 | B | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | II | IV | 2.2 | 200 | A | 2 | B | 0.6 | 5 | 1 | 0.0 | 2 | B | 0.6 | 5 | 1 | 0.0 | 2 | B | 0.6 | 5 | 1 | 0.0 | | | | | | |
| 4S | II | IV | 2.2 | 200 | A | 2 | B | 0.6 | 5 | 1 | 0.0 | 2 | B | 0.6 | 5 | 1 | 0.0 | 2 | B | 0.6 | 5 | 1 | 0.0 | | | | | | |
| 4S | II | IV | 2.2 | 200 | A | 2 | B | 0.6 | 5 | 1 | 0.0 | 2 | B | 0.6 | 5 | 1 | 0.0 | 2 | B | 0.6 | 5 | 1 | 0.0 | | | | | | |
| 4S | II | IV | 2.2 | 200 | A | 2 | B | 0.6 | 5 | 1 | 0.0 | 2 | B | 0.6 | 5 | 1 | 0.0 | 2 | B | 0.6 | 5 | 1 | 0.0 | | | | | | |
| 4S | II | IV | 2.2 | 200 | A | 2 | B | 0.6 | 5 | 1 | 0.0 | 2 | B | 0.6 | 5 | 1 | 0.0 | 2 | B | 0.6 | 5 | 1 | 0.0 | | | | | | |
| 4S | II | II | 2.0 | 200 | A | 2 | G | 0.5 | 5 | 1 | 0.0 | 2 | G | 0.5 | 5 | 1 | 0.0 | 2 | G | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | II | II | 2.0 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | II | II | 2.0 | 200 | A | 2 | G | 0.5 | 5 | 1 | 0.0 | 2 | G | 0.5 | 5 | 1 | 0.0 | 2 | G | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | II | II | 2.0 | 200 | A | 2 | E | 0.5 | 5 | 1 | 0.0 | 2 | E | 0.5 | 5 | 1 | 0.0 | 2 | E | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | II | II | 2.0 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | II | II | 2.0 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | I | III | 2.0 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | I | III | 2.0 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | I | III | 2.0 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | I | III | 2.0 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | I | III | 2.0 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | | | | | | |
| 4S | I | III | 2.0 | 200 | A | 2 | G | 0.4 | 5 | 1 | 0.0 | 2 | G | 0.4 | 5 | 1 | 0.0 | 2 | G | 0.4 | 5 | 1 | 0.0 | | | | | | |
| 4S | I | III | 2.0 | 200 | A | 2 | F | 0.3 | 5 | 1 | 0.0 | 2 | F | 0.3 | 5 | 1 | 0.0 | 2 | F | 0.3 | 5 | 1 | 0.0 | | | | | | |

Gradation Processing
- Rotation Amount (GA)
- Gradation Type (GT)
- Rotation Center (GC)
- Gradation Shifting Amount (GS)

Frequency Processing
- Frequency Rank (RN)
- Enhancing Type (RT)
- Frequency Enhancement (RE)

## [ Dynamic Range Control Processing/Tomographic Artifacts Suppression Processing 2 ]

| Technique | Level | Menu Code | Menu (PA) : Right-to-left reversed output | Applicable projection method and observation site | Remarks |
|---|---|---|---|---|---|
| Plain | 1 | 0700 | FEMUR, DISTAL(AP) | Observation of the femoral bone, soft tissues and the knee (It should be noted however that knee joint observation by axial projection is excluded.) | |
| | 1 | 0701 | TIB/FIB(AP) | Observation of the crural bone and soft part | |
| | 1 | 0706 | FOOT(AP) | Observation of the foot, articulation, tarsal bone, and calcaneus by axial projection | |
| | 1 | 0707 | TOES(AP) | Observation of the toe and phalanges | |
| | 1 | 070B | KNEE, SUNRISE(AP) | Patellar exposure by axial projection | |
| | 1 | 0711 | ANKLE(AP) | Observation of the ankle joint | |
| | 1 | 0716 | FOOT, LATERAL(AP) | Observation of the foot, articulation, tarsal bone, and calcaneus by axial projection for lateral position | |
| | 1 | 0710 | KNEE, AP/OBL(AP) | Observation of the knee joint | |
| | 1 | 0720 | KNEE, LATERAL(AP) | Observation of the knee joint for lateral position | |
| Tomography | 1 | 2200 | LUNG | Mainly tomography of the lung field; observation of the lung field and rib | |
| Magnification | 1 | 0300 | BREAST(PA) | Observation of the whole breast Available for other exposures including spot exposure | |

| EDR mode | | | | | | Display Parameter | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Auto | | Semi | Fix | | Preset mode | Two-image Display | | | | | | | | | | | | | | | | | |
| | | | | | | Left Image | | | | | | Right Image | | | | | | One-image Display | | | | | |
| PRIEF | Type | Type | Lfix | Sfix | | DRN | DRT | DRE | ORN | ORT | ORE | DRN | DRT | DRE | ORN | ORT | ORE | DRN | DRT | DRE | ORN | ORT | ORE |
| 4S | I | III | 2.0 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 |
| 4S | I | III | 2.0 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 |
| 4S | VI | III | 2.0 | 200 | A | 2 | E | 0.5 | 5 | 1 | 0.0 | 2 | E | 0.5 | 5 | 1 | 0.0 | 2 | E | 0.5 | 5 | 1 | 0.0 |
| 4S | I | III | 2.0 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 |
| - | IV | III | 2.6 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 |
| 4S | I | III | 2.0 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 |
| 4S | I | III | 2.0 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 |
| 4S | I | III | 2.0 | 200 | A | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 | 2 | F | 0.5 | 5 | 1 | 0.0 |
| 4S | I | III | 2.0 | 200 | A | 2 | E | 0.5 | 5 | 1 | 0.0 | 2 | E | 0.5 | 5 | 1 | 0.0 | 2 | E | 0.5 | 5 | 1 | 0.0 |
| 1 | II | IV | 2.2 | 200 | A | 5 | A | 0.0 | 4 | 0 | 3.0 | 5 | A | 0.0 | 4 | 0 | 0.0 | 5 | A | 0.0 | 4 | 0 | 3.0 |
| 2 | I | I | 1.8 | 40 | A | 8 | E | 1.0 | 5 | 1 | 0.0 | 8 | E | 0.0 | 5 | 1 | 0.0 | 8 | E | 1.0 | 5 | 1 | 0.0 |

Gradation Processing: Rotation Amount (GA), Gradation Type (GT), Rotation Center (GC), Gradation Shifting Amount (GS)
Frequency Processing: Frequency Rank (RN), Enhancing Type (RT), Frequency Enhancement (RE)

# Appendix YIV

# Flexible Noise Control Software Parameters

| Exposure Menu Name | Related Menu | MPM |
|---|---|---|
| CHEST,FRN P→A | Chest, General; Chest, Frn (A—>P) | 0200 |

**As for exposure menu names, typical menus are written. Associated menus are those which will be processed under exactly the same conditions as exposure menus are processed. Processing conditions are determined by the MPM code.**

| | FFC | FNB | FNT | FNE | GA | GT | GC | GS | MRB | MRT | MRE | MDB | MDT | MDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Left Image | A | E | B | 0.5 | 1.0 | E | 1.60 | -0.20 | D | R | 0.3 | A | B | 0.4 |
| Right Image | | | | | 0.9 | A | 1.50 | -0.20 | D | R | 6.0 | A | B | 0.0 |
| One image | | | | | 1.0 | E | 1.60 | -0.20 | D | R | 0.3 | A | B | 0.4 |



## 1 Menus to which FNC is applied by default

Only menus to which FNC is set to be applied by default are described in Chapter YIV. For other menus that are not covered here, FNC is set to be OFF by default.

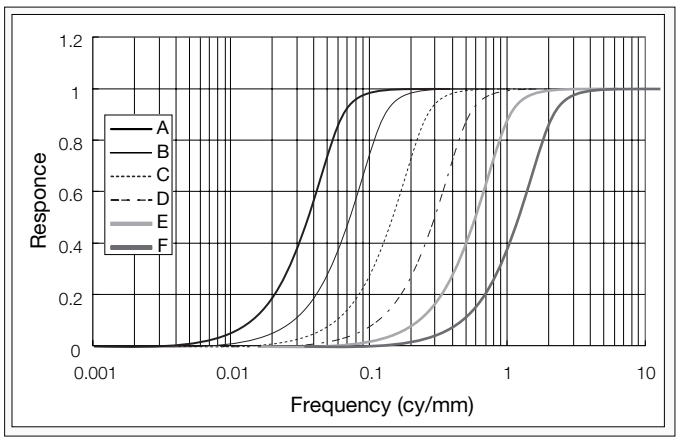
## 2 FNC parameters

There are the following four FNC parameters: FFC, FNB, FNT, and FNE. The above example shows conditions for Chest, Frn images.

**2.1** FFC : This is a parameter to determine to what extent FNC is to be applied depending on the dose of X-rays applied for irradiation.

- A With decreasing doses of X-rays irradiated, the application of FNC increases. (For radiographs in general)
- M Irrespective of the dose of X-rays irradiated, FNC is applied to a certain fixed degree. (For linacgraphy)

**2.2** FNB : This is a parameter to determine to what extent FNC is to be applied in relation to frequency components.
"A" controls noise over the entire gamut of frequency components, from low to high. As the parameter value proceeds toward "F," FNC is applied predominantly to higher frequency components.

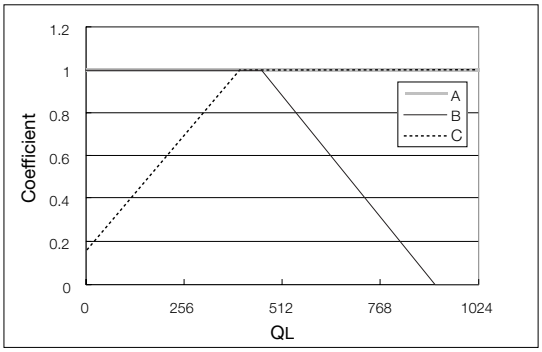


**2.3** FNT : This is a parameter to determine to what extent FNC is to be applied in relation to image density.

A Independent of density, the degree of application of FNC remains constant.

B With increasing density, the degree of application of FNC decreases.

C With decreasing density, the degree of application of FNC decreases.




**2.4** FNE : This is a parameter to determine to what extent FNC is to be applied. It is defined over a range of 0.0 to 1.0. The value 1.0 denotes the full application of FNC and 0.0 while the value 0.0 represents no FNC application.

### 3 Gray-scale processing parameters (GA, GT, GC, and GS)

For the meanings of the individual parameters, refer to Chapter YII. Normally, even when FNC is applied, there is no need to make changes to gray-scale processing conditions.

### 4 MFP processing parameters (MRB, MRT, MRE, MDB, MDT and MDE)

For the meanings of the MFP processing parameters, refer to Chapter YII. Normally, optimum frequency processing conditions vary depending on whether or not FNC is applied. Generally, when FNC is being applied, the degree of frequency enhancement is to be increased. (This is accomplished by either increasing MRE or changing MRT.)

#### ● Features of FNC

1. It is impossible to make things invisible visible. However, when signals are weak and sometimes become buried in noise, the effect of making them easier to see may be expected.
2. Frequency processing enhances noise along with signals. On the other hand, since noise is controlled on FNC-applied images, enhancement will be able to be applied to them to a greater degree than to conventionally prepared images. (With noise being approximately the same as before, greater signal enhancement is possible.)

➤ Precautions and hints

1. By virtue of the suppression of noise by FNC, the reduction of radiological exposure may become possible. However, reducing the dose of X-rays for irradiation entails a weakening of signals. So, when you determine the dose of X-rays to be applied, please make a visual check on actually exposed images for their suitability for observation.

2. Just as is the case with any image processing, excessive application of FNC can produce artificially looking results. When you make a condition change, please make a visual check on actually exposed images for their suitability for observation. FNC condition changes can be performed by means of the User Utility on the CR Console. (Password-based control)

3. FNC can be implemented only on the CR Console. Images in the form of FNC-applied data can be transferred to other equipment such as HI-C. Please note that FNC cannot be performed on other equipment than the CR Console.

4. FNC parameters will not be indicated on film. When hardcopy films are directly output from the CR Console, only a mark indicating whether or not FNC has been applied will be indicated on each film. In the case of other equipment, such a mark may or may not be shown on film depending on the version and other factors of such equipment.

5. FNC is not applied to images shown on the display monitor of the CR Console.

6. FNC views image S values to determine to what degree the noise should be controlled, requiring thus you to check S values periodically. S values can be controlled effectively by using the RU QC tool (optional software). If no QC tool is used, you can determine rough behaviors of the S values by using an appropriately controlled X-ray generator to perform exposures and checking those values detected on image data read under certain conditions. The guideline to be adopted is about twice the control range.

## ● Chest / Vertebral Body / Pelvis

| Exposure Menu Name | Related Menu | MPM |
|---|---|---|
| CHEST,FRN P->A | Chest, General; Chest, Frn (A—>P) | 0200 |
| CERVICAL SPINE | Cervical Spine, Frn; Cervical Spine, Lat; Cervical Spine, Flexion; Cervical Spine, Extension; Cervical Spine, RAO; Cervical Spine, LAO; Cervical Spine, Obl | 0101 |
| OPEN MOUTH | | 0106 |
| THORACIC SPINE,FRN | | 0201 |
| THORACIC SPINE,LAT | | 0209 |
| THORACIC SPINE,OBL | | 0211 |
| LUMBAR SPINE | Lumbar Spine, Frn; Lumbar Spine, RAO; Lumbar Spine, LAO; Lumbar Spine, Obl | 0501 |
| SACRUM/COCCYX | Sacrum/Coccyx, Frn; Sacrum/Coccyx, Lat; Sacroiliac Jnt, Frn; Sacroiliac Jnt, Obl; Ischium, Frn; Ischium, Lat; Sacrum, Frn; Sacrum, Lat; Coccyx, Frn; Coccyx, Lat | 0502 |
| HIP JNT | Hip Jnt, Frn; Lauenstein | 0508 |
| PELVIMETRY | Guthmann; Martius | 0504 |

**FNC Processing**
- Filter Control Type of FNC (FFC)
- Balance Type of FNC (FNB)
- Type of FNC (FNT)
- Enhancement of FNC (FNE)

**Gradation Processing**
- Rotation Amount (GA)
- Gradation Type (GT)
- Rotation Center (GC)
- Gradation Shifting Amount (GS)

**Multi-Objective Frequency Processing**
- Balance Type (MRB)
- Enhancing Type (MRT)
- Enhancement (MRE)

**Multi-Objective DRC Processing**
- Balance Type (MDB)
- Enhancing Type (MDT)
- Enhancement (MDE)

| | FFC | FNB | FNT | FNE | GA | GT | GC | GS | MRB | MRT | MRE | MDB | MDT | MDE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Left Image | A | E | B | 0.5 | 1.0 | E | 1.60 | -0.20 | D | R | 0.3 | A | B | 0.4 |
| Right Image | – | – | – | – | 0.9 | A | 1.50 | -0.20 | D | R | 6.0 | A | B | 0.0 |
| One image | A | E | B | 0.5 | 1.0 | E | 1.60 | -0.20 | D | R | 0.3 | A | B | 0.4 |
| Left Image | A | C | C | 0.6 | 1.1 | F | 0.60 | 0.30 | C | P | 0.8 | A | K | 0.2 |
| Right Image | – | – | – | – | 1.0 | A | 0.50 | 0.10 | D | T | 6.0 | A | K | 0.0 |
| One image | A | C | C | 0.6 | 1.1 | F | 0.60 | 0.30 | C | P | 0.8 | A | K | 0.2 |
| Left Image | A | C | C | 0.6 | 1.0 | G | 0.70 | 0.25 | C | Q | 0.8 | A | F | 0.3 |
| Right Image | – | – | – | – | 1.0 | A | 0.50 | 0.10 | D | T | 6.0 | A | K | 0.0 |
| One image | A | C | C | 0.6 | 1.0 | G | 0.70 | 0.25 | C | Q | 0.8 | A | F | 0.3 |
| Left Image | A | C | C | 0.6 | 1.1 | G | 0.90 | 0.30 | C | T | 0.8 | A | M | 0.2 |
| Right Image | – | – | – | – | 1.0 | A | 0.70 | 0.20 | D | T | 6.0 | A | M | 0.0 |
| One image | A | C | C | 0.6 | 1.1 | G | 0.90 | 0.30 | C | T | 0.8 | A | M | 0.2 |
| Left Image | A | C | C | 0.6 | 1.0 | G | 0.90 | 0.10 | C | T | 0.8 | A | B | 0.2 |
| Right Image | – | – | – | – | 1.0 | A | 1.00 | 0.00 | D | T | 6.0 | A | B | 0.0 |
| One image | A | C | C | 0.6 | 1.0 | G | 0.90 | 0.10 | C | T | 0.8 | A | B | 0.2 |
| Left Image | A | C | C | 0.6 | 1.1 | G | 0.90 | 0.40 | C | T | 0.8 | A | M | 0.2 |
| Right Image | – | – | – | – | 1.0 | A | 0.70 | 0.10 | D | T | 6.0 | A | M | 0.0 |
| One image | A | C | C | 0.6 | 1.1 | G | 0.90 | 0.40 | C | T | 0.8 | A | M | 0.2 |
| Left Image | A | C | C | 0.6 | 1.1 | O | 0.90 | 0.40 | C | P | 0.5 | A | J | 0.4 |
| Right Image | – | – | – | – | 1.0 | A | 0.90 | 0.10 | D | T | 6.0 | A | J | 0.0 |
| One image | A | C | C | 0.6 | 1.1 | O | 0.90 | 0.40 | C | P | 0.5 | A | J | 0.4 |
| Left Image | A | C | C | 0.6 | 0.9 | O | 0.90 | 0.20 | C | P | 0.6 | A | E | 0.5 |
| Right Image | – | – | – | – | 0.9 | A | 1.20 | 0.10 | D | T | 6.0 | A | E | 0.0 |
| One image | A | C | C | 0.6 | 0.9 | O | 0.90 | 0.20 | C | P | 0.6 | A | E | 0.5 |
| Left Image | A | C | C | 0.6 | 1.3 | D | 0.60 | 0.25 | C | P | 0.6 | A | F | 0.5 |
| Right Image | – | – | – | – | 0.9 | A | 0.60 | 0.10 | D | T | 6.0 | A | F | 0.0 |
| One image | A | C | C | 0.6 | 1.3 | D | 0.60 | 0.25 | C | P | 0.6 | A | F | 0.5 |
| Left Image | A | B | C | 0.7 | 1.1 | D | 0.60 | 0.20 | B | Q | 0.7 | A | J | 0.1 |
| Right Image | – | – | – | – | 0.9 | A | 0.70 | 0.00 | C | Q | 5.0 | A | J | 0.0 |
| One image | A | B | C | 0.7 | 1.1 | D | 0.60 | 0.20 | B | Q | 0.7 | A | J | 0.1 |

# Appendix Z

# Precautions for Exposure


Pages

Precautions to Take Before Exposure ____ Z-2

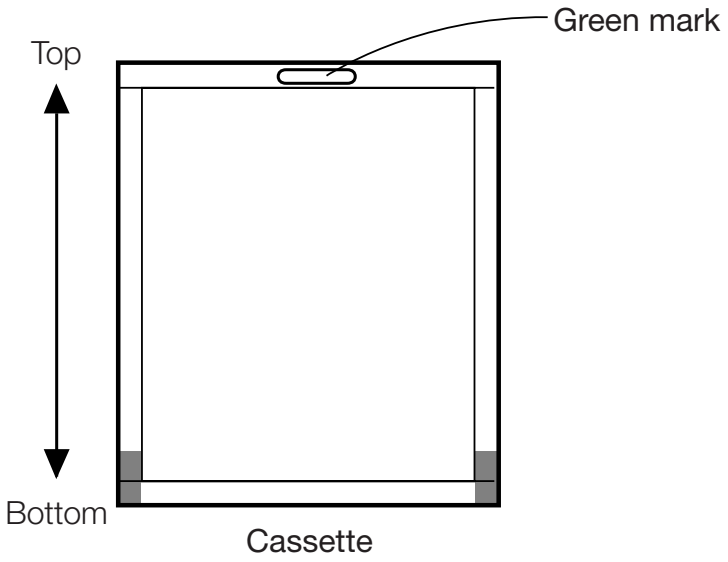
Precautions to Take in Each Mode ____ Z-3


Z

# Precautions to Take Before Exposure

**This section describes precautions to take in each mode.**

It is recommended to use Bucky's device to remove scatter rays and obtain a high-quality image.
When carrying out exposure using a stationary grid, it is recommended to use a 60 lines/cm grid with fewer artifacts.
Use a grid whose line direction is parallel to the cassette's vertical direction (between top and bottom).



# Precautions to Take in Each Mode

**This section describes some precautions that must be followed when making radiographic exposures in each of the following modes: Auto mode, Semi-auto mode, Semi-X mode, and Fix Mode.**

## 1 Precautions for Exposure in the AUTO MODE

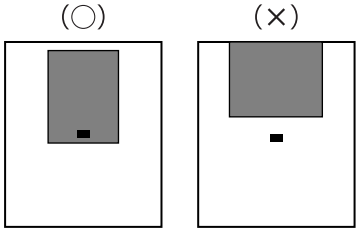
**In the Auto mode, radiographic images that interfere with image reading are obtained in some cases due to variations in multileaf collimator settings on the X-ray exposure unit and/or the effects of scatter rays. If you encounter such cases, please contact your local authorized distributor for consultation and advice, and make radiographic exposures in a different mode such as the Semi-auto mode or the Fix mode.**

Here are precautions to take in order to obtain stable image quality in the Auto mode:

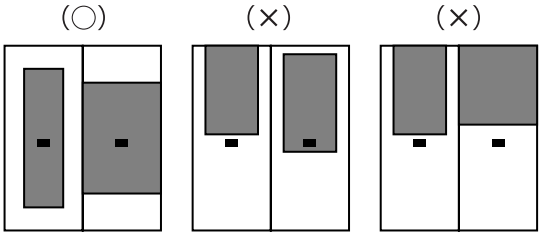

1. Radiation Field and IP Split Pattern Recognition.... (1.1)
2. Depiction of the Cervical Region.....(1.2)
3. Depiction of HIP JOINT AXL - 2 .....(1.3)
4. Cautions for “PANTOMO” X-ray Exposures Using a 10"×12" Cassette .....(1.4)
5. EDR Image Data Analysis .....(1.5)


### 1.1 Radiation Field and IP Split Pattern Recognition

- Be sure that the center (25×25mm) of the IP is in the radiation field. If the IP is split for multiple exposures, each center of the split portions must be covered by the radiation field.




IP center: 25mm×25mm area (black rectangles in examples above) located in the center of the IP

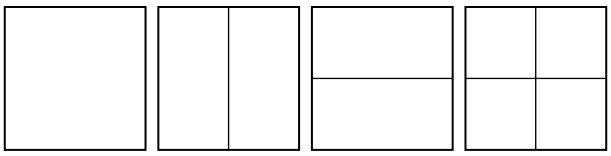



Center of the split portion: 25mm×25mm area (black rectangles in examples above) located in the center of each split portion

- Do not set the radiation field extremely small. Be sure to expose X-rays on one thirds or more of the length of each side of the IP.
- Be sure that each side of the radiation field does not overlap with the contrast medium. Error will occur if they overlap each other.

**This subsection explains precautions to be exercised regarding “Radiation Field and IP Split Pattern Recognition” processing (hereafter referred to as PRIEF) which is performed when you make radiographic exposures in the Auto mode.**

The “S” in PRIEF4S and PRIEF1S is a symbol to signify that IP-split recognition is possible. There are the following four split-IP exposure patterns:



Full-IP exposure  Half-split IP (vertical)  Half-split IP (horizontal)  Quarter-split IP

* When making multiple exposures on a split IP, a split portion(s) may be left unexposed.

Guidance as to which to use: PRIEF4S or PRIEF1S
Table Z-1 shows the relationships among anatomical regions to be radiographed, radiographic exposure methods, PRIEF4S and PRIEF1S.
Explanations on PRIEF4S and PRIEF1S are also provided along with precautions to take with them.

**[Table. Z-1] At-a-glance guide to availability of PRIEF4S/PRIEF1S for each anatomical region/exposure method**

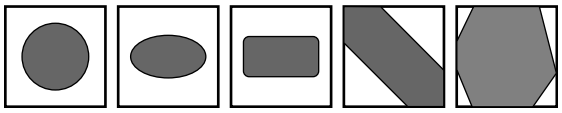
| | Plain | Contrast Medium | Tomography |
|---|---|---|---|
| Head | 4S | 4S | 4S (1 for pantomography) |
| Neck | 4S | 4S | 1S |
| Chest | 4S | 4S (1 for esophagus) | 1 |
| Abdomen | 4S | 4S (1S for stomach and intestines) | 1 |
| Pelvis | 4S | 4S | 1 |
| Upper extremity | 4S | 4S | 1 |
| Lower extremity | 4S | 4S | 1 |

**Notes on PRIEF**

**[PRIEF 4S]**

Used, with some exceptions, for both plain and contrast medium exposure menus, from head to lower extremities.

- The diaphragm shape will be any convex polygons including rectangle, circle, ellipse, track, etc.



**[PRIEF 1]**

Used to tomography menus for chest, abdomen, pelvis, upper and lower extremities.

- When the IP is not split and the diaphragm is closed, adjust the shape so that it is parallel to the IP side.
- When conducting multiple exposures with a split IP using the PRIEF 1 menu.
  1) do not close the diaphragm.
  2) expose all the split portions of the IP.

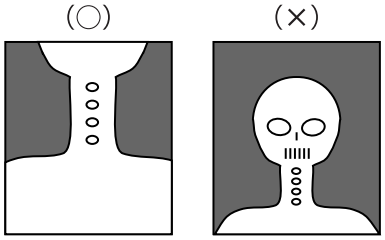
[PRIEF 1S]

Used to neck tomography and stomach contrast medium menus.

- When the IP is not split and the diaphragm is closed, adjust the shape so that it is parallel to the IP side.

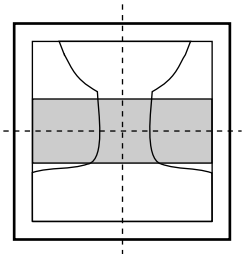
## 1.2 Depiction of the Cervical Region

- The radiation field must not include the whole head. Be sure to secure transparent portions on both sides of the neck.

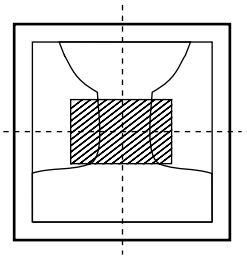



Use the “Skull, General” menu to include the whole head in the radiation field.

- For exposure of the pharynx and/or larynx, be sure that the neck comes to the center of the radiation field, especially in terms of upper and lower margins.

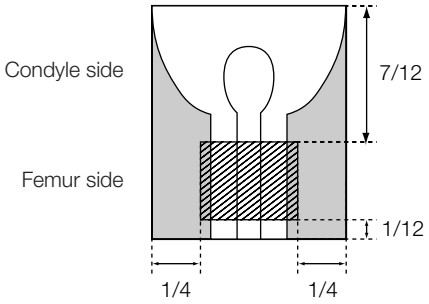


- In pharynx and/or larynx exposure, do not use lead characters in the oblique line section.



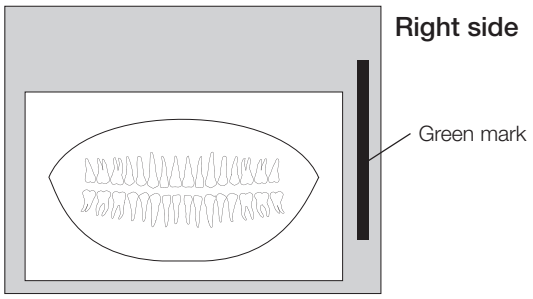
## 1.3 Depiction of HIP JOINT AXL - 2

- Make sure to position the region of interest to the slanted-line area shown below. Do not collimate further inside.
- Positioning should be done so that the condyle and the femur run along the longer edge. (Do not have them positioned against the shorter edge.)



## 1.4 Cautions for “PANTOMO” X-ray Exposures Using a 10"×12" Cassette

- To obtain properly displayed images, set the 10"×12" cassette in the dedicated cassette holder of the exposure unit so that the green mark on top of the cassette is positioned on the right side when viewed from the X-ray tube, as illustrated below.




**10"x12" cassette**

- For image output, the “PANTOMO” X-ray exposure menu (M2004) takes only an area of 15×30cm from the 10"×12" exposure area. If you wish an image be output using the entire 10"×12" area, use the “PANTOMO-2:T” (7004) exposure menu.

## 1.5 EDR Image Data Analysis

- Image unevenness appearing when the grid used for exposure is not correctly positioned in terms of the bulb, clothes shadow or unevenly radiated X-ray to the X-ray exposure area can be referred to as the problems occurring during the EDR image data analysis, which cause unstable density on the image. Avoid such unevenness in the X-ray exposure area as far as possible.
- If the target includes such materials as gypsum, denture, etc., stable density may not be obtained because such materials make it difficult to analyze EDR image data. In such a case, use the S-Shift/C-Shift or FIX MODE.
- For multiple exposures with a split IP, make exposure doses on each portion of the IP as equal as possible (maximum 1.6 times). In other words, for multiple exposures, submit each portion of the IP to the appropriate exposure dose according to the intended anatomical region as usual.

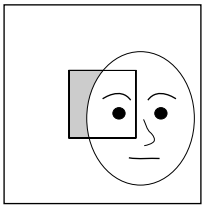
**Precautions when using the AUTO MODE.**

| Mode type | Precautions |
|---|---|
| I | As this mode is available on the assumption that it extracts information concerning the skin, secure the positioning so that there is an area other than the target where the direct X-rays are incident. |
| II | No special precautions |
| III | Be sure to use the Ba contrast medium. |
| IV | 1 Be sure to secure the positioning so that the X-rays are incident directly in the area outside the target.<br>2 As the reading latitude is fixed, it is necessary to control the tube voltage as usual according to the thickness of the target. |
| V | As the reading latitude is fixed, it is necessary to control the tube voltage as usual according to the thickness of the target. |
| VI | No special precautions |
| VII | No special precautions |

## 2 Precautions for Exposure in the SEMI-AUTO MODE

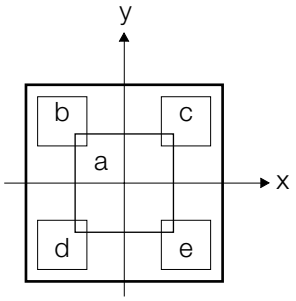
**The precautions are common to Semi I, II, III or III(**).**

- Center area of the IP 10×10cm (Semi I)
  7× 7cm (Semi II)
  5× 5cm (Semi III)
  Position the portion you need to display of ten in each of the 5×5cm (Semi III (**))center are as of the half-split IPs (both upper and lower halves and right and left halves) and the quarter-split IP.
- Never position anything other than the subject in the above mentioned areas. If anything other than the subject is positioned in such areas, the image density will become thinner. In addition, do not position any metals or artificial bones in such areas. The image density will become higher if such an object is positioned in such areas.



(×)

- It is necessary to control the tube voltage as usual according to the subject thickness.
  The following precautions should be observed for Semi IV.



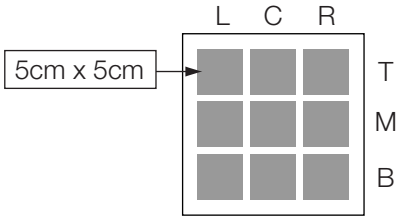

| Area | Center Coordinate (x:y) cm | Size (cm) |
|---|---|---|
| a | (0, 0) | 10×10 |
| b | (-5, 7) | 6×6 |
| c | (5, 7) | 6×6 |
| d | (-5, -7) | 6×6 |
| e | (5, -7) | 6×6 |

- Do not position transparent portions (area other than the subject) in the abovementioned five areas.
- It is necessary to control the tube voltage as usual according to the subject thickness.

The SEMI-AUTO MODE has been preset around the magnification menu.

## 3 Precautions for Exposure in the SEMI-X MODE

**The user will select the nine areas accordingly, on which the SEMI-AUTO MODE applies. (See the illustration below.)**
**The same precautions as for the SEMI-AUTO MODE apply.**




## 4 Precautions for Exposure in the FIX MODE

**As reading conditions are fixed, exposure conditions must be controlled in the same way as for conventional X-ray exposure.**
**The reading conditions (sensitivity and latitude) have been preset according to the relevant menu in the FIX MODE. Thus, select the exposure conditions that correspond to that menu.**

# Maintenance and Inspection

## 1 Maintenance and Inspection Items Assigned to Specified Dealer

For periodical inspection of the equipment and necessary arrangements, consult our official dealer or local representative.

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